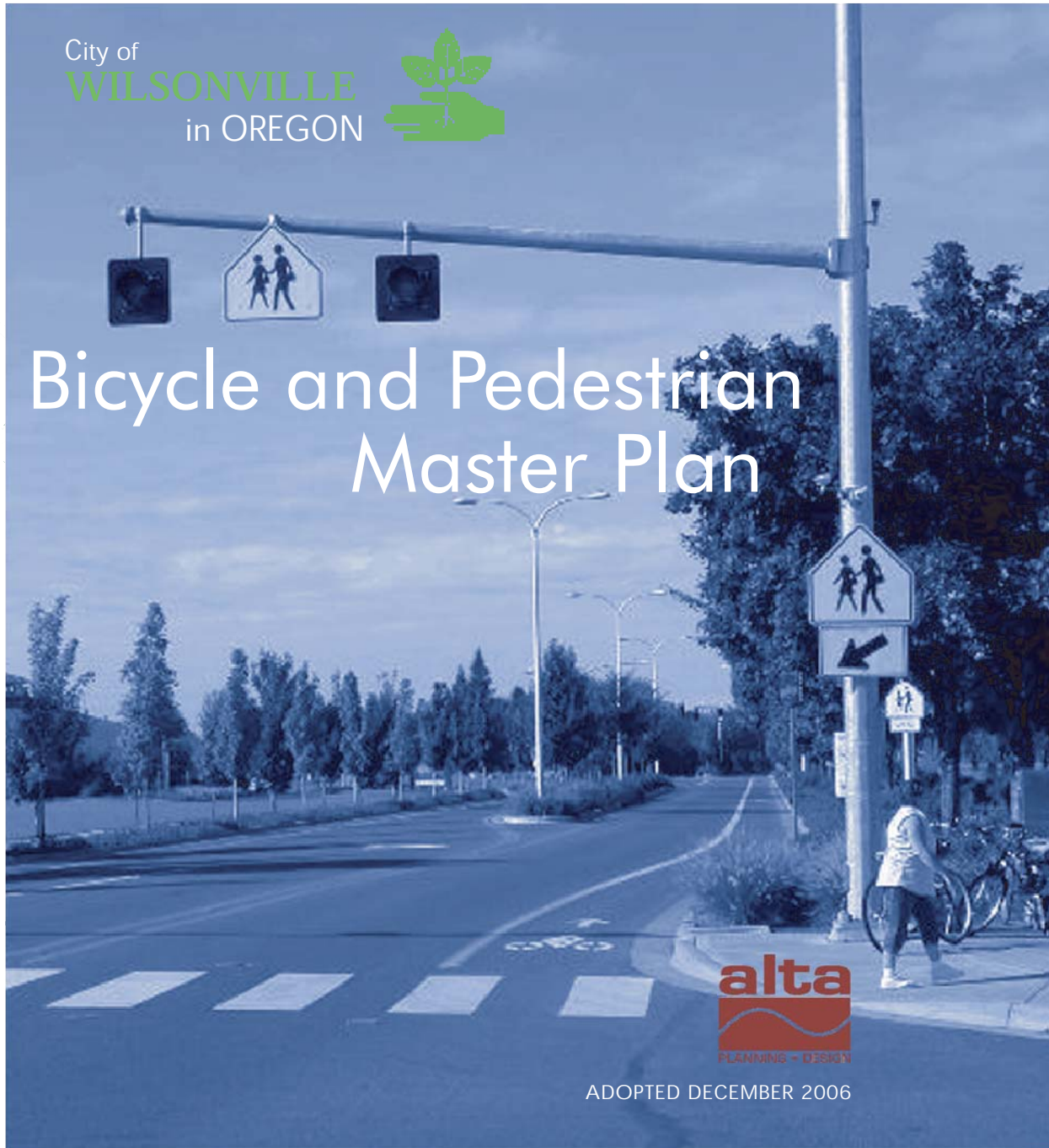




City of
WILSONVILLE
in OREGON



Bicycle and Pedestrian Master Plan



ADOPTED DECEMBER 2006

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Advisory Committee on Master Planning

Michelle Ripple – Chair
Phyllis Straight-Millan – Vice Chair
Tommy Egger*
Dan Hoyt*
Lourdes Islas-Ramirez*
Al Levit
Martin Rockwell
Claudia Ramirez*
Dresden Skees-Gregory*
Steven Van Wechel
Vern Wise
Randy Wortman

Benny Holt, Wilsonville City Council Representative
Sue Guyton, Wilsonville Planning Commission Representative
Robert Meyer, Wilsonville Parks Board Representative
Mel Huie, Metro Ex-Officio
Tim Woodley, WLWV School District Ex-Officio
Vicki Yates, Wilsonville Chamber of Commerce Liaison

City Council

Charlotte Lehan, Mayor
Benny Holt
Alan Kirk
Tim Knapp
Sandra Scott-Tabb*
Michelle Ripple

* former City Council or ACMP member

Planning Commission

Debra Iguchi - Chair
Mary Hinds - Vice Chair
Craig Faiman
Richard Goddard
Susan Guyton
Heidi Juza
Joe Maybee

City Staff

Arlene Loble, City Manager
Peggy Watters, Community Services Director
Kerry Rappold, Natural Resource Program Manager
C. J. Sylvester, Redevelopment Director
Dave Waffle, Community Development Director
Sandi Young, Planning Director
Chris Neamtzu, Long Range Planning Manager
Linda Straessle, Administrative Assistant
Floyd Peoples, Public Works Operations Manager
Gary Wallis, Finance Director
Eldon Johanson, Special Projects Coordinator

Consultant Team

Alta Planning + Design, Inc.



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Executive Summary

Transportation and recreation are critical facets of life in Wilsonville, and include parks and natural areas; play and sports facilities; recreational amenities and programs; public transit services and connections; and on-street and off-street bikeways, walkways, and trails. Planned separately, each of these elements provides benefits to residents across the spectrum of age, economic status, physical ability, neighborhood location, and daily activity set. Planned in unison, these elements offer complete community connectivity and interrelated opportunities for work, play, shopping, and exercise for residents, employees, and visitors in and between every neighborhood in the City.

From 2004 to 2006, the City of Wilsonville updated its Parks and Recreation, Bicycle and Pedestrian, and Transit Master Plans. Recognizing the unique opportunity afforded by simultaneous planning processes, the City integrated plan development with public involvement. This effort brought together the disparate parts into a complete transportation and recreation package, providing linkages, connections, and experiences for residents in every neighborhood citywide.

The vision of the Master Plans is for Wilsonville residents to be able to easily and safely access a variety of parks and natural areas from neighborhoods; walk or bicycle to parks, schools, commercial areas,

employment centers, and transit stops; and take transit to parks, other Wilsonville destinations, and neighboring communities. The community will reap the health, economic, and safety benefits of these improvements for generations to come.

System Linkages

The following list demonstrates the connections that have been incorporated into the Master Plans. All of Wilsonville's citizens will have enhanced abilities to:

- Incorporate the concept of "active living" into daily activities
- Walk, bike, skate, scoot, or roll from wherever you are to wherever you want to go
- Bus around town, to Charbonneau, Canby, Salem, or Portland
- Play sports, recreate, and enjoy nature in every neighborhood
- Walk, bike, or ride to parks on the river, and paddle on the river
- Walk or bike to bus stops, then take a bus to your destination

Each of the three Master Plans evaluates the completeness of the individual system (bicycle and pedestrian, parks and recreation, or transit) and forges strong connections among the three systems.



Clean, green, safe, and connected — the future vision of Wilsonville

Parks and Recreation

This Plan analyzes the location of Wilsonville’s parks and recreation sites, and plans for future growth and expansion of the City’s park system. The Plan reviews the adequacy of parks in each neighborhood in order to create a priority parks project list. The Bicycle and Pedestrian Plan was coordinated with this plan to ensure complete connections to existing and planned parks, and the Transit Plan analyzes transit connections to parks and other important recreation destinations.

Transit

The Transit Plan locates key destinations within and outside of Wilsonville, in order to plan for the future of the multi-modal transit center. Both the Bicycle and Pedestrian Master Plan and the Transit Plan analyze the location of sidewalks in relation to transit stops, and prioritize sidewalk infill projects that enhance the ability of citizens to access transit. Over the next few years, the transit system will add more service as commuter rail arrives in Wilsonville, creating a hub at the Barber Street Station and connecting to other communities.

Bicycle and Pedestrian

This Plan focuses on complete community connectivity via a hierarchy of trail types. The location of existing and planned parks, neighborhoods, schools, and industrial development are integrated with the existing and proposed on- and off-street bike and pathway system. For example, regional and community trails are closely coordinated with parks and schools, and industrial area waysides are tied to planned trails on the west side of Wilsonville. In addition, the Plan highlights the numerous opportunities for creating and enhancing regional connections.

Master Planning Process

Led by the Advisory Committee on Master Planning (ACMP), community involvement and input has been a key part of the planning process. ACMP members represent diverse community interests, and have guided the process and advised staff and consultants every step of the way. In addition, staff met with over a dozen stakeholder groups, held six well-attended public meetings, sent mailings to every household in the City, provided information through its website, conducted a (telephone or mail) survey, and

integrated hundreds of comments into every facet of each plan. As such, these plans truly represent a community consensus on the long-term vision of how Wilsonville can enhance its quality of life by the way it looks, functions, and allocates resources for the next 20 years.

Throughout the planning processes, the community expressed key priorities, including:

- improving access to and across the Willamette River,
- providing a comprehensive system of bikeways and walkways,
- developing a pool and aquatic center,
- serving and connecting underserved neighborhoods, and
- providing park and natural area experiences close to home and work.

The following key projects emerged as elements to be addressed through the Master Plans: improving crossing of the Willamette River; providing bicycle parking at the Multi-Modal Transit Center; implementing master plans for Boones Ferry, Villebois, Montebello, and Canyon Creek parks; and improving Town Center Loop.



1. Introduction

Benefits of Walking and Bicycling

Plan Overview

Plan Concept

1. Introduction

The City of Wilsonville recognizes that bicycling and walking enhances the quality of life for residents, commuters, and other visitors to the City. This Plan is for all residents who desire to bicycle or walk to work; improve their level of daily physical activity; go for a family bicycle ride to the park, library, or down to the Willamette River; or experience an undeveloped natural area such as Graham Oaks.

The Bicycle and Pedestrian Master Plan was developed in concert with the Parks and Recreation Master Plan and the Transit Master Plan, as Wilsonville recognizes the benefits of linking these three plans. Wilsonville's parks and recreation areas provide wonderful destinations and improved park facilities, and improved non-motorized routes to those destinations would benefit the entire city. Eighty-two percent of Community Recreation Survey respondents reported using Wilsonville parks, with biking and walking for exercise the second most popular use. Ninety percent of the respondents also indicated that more bikeways and walkways are needed. Similarly, South Metro Area Rapid Transit (SMART) provides excellent transit service to those who live and work in Wilsonville. It is desirable to create stronger linkages between SMART and the bicycle and pedestrian system, so that residents and commuters have a greater ability to link biking and walking with a transit trip to their local or regional destination.

Benefits of Walking and Bicycling

Walking and bicycling are healthy, efficient, low cost modes of travel, available to nearly everyone. Walking is the most basic form of transportation. Almost everyone is a pedestrian at some point in the day, since walking is often the quickest way to accomplish short trips in urban areas. Pedestrians also include persons using wheelchairs and other forms of mobility devices. Bicycling is the most energy efficient form of transportation today. A car will only travel 280 feet on the number of calories that a bicyclist needs to travel three miles.

Key findings from the Community Recreation Survey indicate that Wilsonville is an active community, with

significant support for trail-related activities. Five of the ten most popular activities in Wilsonville are trail-related: walking for exercise, walking for pleasure, dog walking, bicycling for pleasure, and nature walks.



A cyclist in Charbonneau

Walking and bicycling help develop and maintain "livable communities," make neighborhoods safer and friendlier, save on motorized transportation costs, and reduce transportation-related environmental impacts, mobile emissions, and noise. They provide transportation system flexibility by providing alternative mobility options, particularly in combination with transit systems, to people of all ages and abilities. Active living that integrates walking and bicycling into daily activities is key to improving public health and reducing Oregon's obesity crisis. Planners and city leaders are encouraged to create more walkable and bikeable communities that promote healthier lifestyles.

Walking and bicycling are important to the health of all those living and working in Wilsonville, not just to those doing the walking or cycling. People choosing to ride or walk rather than drive are typically replacing short automobile trips, which contribute disproportionately high amounts of pollutant emissions to the environment. Since bicycling and walking contribute no pollution, require no external energy source, and use land efficiently, they effectively move people from one place to another without adverse environmental impacts.

Bicycling and walking can also help alleviate congestion on stressed transportation systems. Nationally, the

number of vehicle miles traveled (VMT), rates of car ownership, and trips have continued to grow, which has increasingly stressed transportation systems (primarily roadways) and contributed to congestion (National Personal Transportation Survey, 2003).

Bicycling and walking require less space and infrastructure when compared to automobile facilities. Improvements made for bicyclists often result in better conditions for other transportation users as well. For instance, paved shoulders, wide curb lanes, and bicycle lanes not only provide improved conditions for bicyclists, but also often contribute to safer conditions for motorists and a reduction in roadway maintenance costs as well.



Walking and bicycling are also good choices for families. A bicycle enables a young person to explore her neighborhood, visit places without being driven by her parents, and experience the freedom of personal decision-making. More trips by bicycle and on foot mean fewer trips by car. In turn, this means less traffic congestion around schools and in the community, and less time parents spend driving their children.

Bicycling and walking create opportunities to speak to neighbors and put more "eyes on the street" to discourage crime and violence. It is no accident that communities with high levels of walking and bicycling have low crime rates and are generally attractive and friendly places to live.

The extent of bicycling and walking in a community has been described as a barometer of how well that community is advancing its citizens' quality of life.

Streets that are busy with bicyclists and walkers are considered to be environments that work at a human scale, and foster a heightened sense of neighborhood and community.

Plan Overview

Wilsonville completed a bicycle and pedestrian plan in 1993, which was updated primarily for off-street trails in the 1994 Parks and Recreation Master Plan. The Transportation System Plan (TSP), which was adopted in 2003, took the on-street system and updated that information, while incorporating the 1994 off-street information. This became Chapter 5 of the 2003 TSP. This document (2006) replaces Chapter 5 by enhancing the ideas put forth in that document while addressing additional topics such as SR2S, crossings, enhanced regional connections, and the planning efforts that have been undertaken since 2003 for Graham Oaks, Villebois, and Memorial Park.

This Plan replaces Chapter 5 of the 2003 Wilsonville Transportation System Plan. As such, the following goal, policies, and implementation measures from that chapter were embraced and incorporated into this Master Plan.

Goal

To promote non-motorized travel and provide a safe, interconnected system of pedestrian and bicycle facilities.

Policies

The City of Wilsonville shall:

1. Continue to improve and expand pedestrian and bicycle facilities, as needed throughout the community, with a focus on improved connectivity both within the City and with the Metro Regional Bicycle System.
2. Ensure that pedestrian and bicycle networks provide direct connections between major activity centers (e.g., civic, employment, and retail centers) and minimize conflicts with other modes of transportation.
3. Regard facilities for bicyclists and pedestrians as important parts of the overall transportation system and not just recreational facilities.
4. Increase the bicycle share mode throughout the City and improve bicycle access to the City's transportation system.

Implementation Measures

1. Determine the actual location, design, and routing of pedestrian and bicycle facilities with user safety, convenience, and security as primary considerations.
2. Schedule and coordinate all pedestrian and bicycle improvements with the City's ongoing Capital Improvement Program.
3. Retrofit existing pedestrian and bicycle facilities to current standards to promote safety, connectivity, and consistency, as funds become available to do so.
4. Discourage the use of cul-de-sac street designs without pedestrian and bicycle connectivity when feasible alternatives exist to establish a system of connecting local streets.
5. Require pedestrian and bicycle connections within and between developments to provide convenience and safety for pedestrians and bicyclists. The purpose of this measure is to provide alternative routes to the collector and arterial street system.
6. Revise appropriate Code sections (Sidewalk and Pathway Standards) to require pedestrian connections between building entrances, streets, and adjoining buildings.
7. Create a bicycle and pedestrian advocacy group to monitor, advise and coordinate the efforts of local and regional agencies to develop a convenient, safe, accessible and appealing system of bicycle and pedestrian walkways. Purposes - Bicycle Education and Safety, Driver Education regarding Bicycle and Pedestrian laws; advise Planning Commission and Parks and Recreation Advisory Board on local needs; track implementation of facilities in the Transportation Systems Plan and report status annually to Planning Commission and Park and Recreation Advisory Board; coordinate with Washington County, Clackamas County and Metro on regional bicycle issues; coordinate with Bicycle Transportation Alliance and other organizations; coordinate with ODOT, and other appropriate agencies.
8. Identify and apply for all available state and federal grant funding opportunities to fund the system improvements identified.
9. Require development of secondary pedestrian and bicycle walkways and bikeways internal to individual developments, consistent with the Transportation Planning Rule and Metro's Urban Growth Management Functional Plan.
10. Based upon Planning Division analysis and Planning Commission findings, revise appropriate code sections to designate pedestrian districts in mixed-use areas and implement street and site design standards that support this designation.
11. Establish pedestrian and bicycle construction standards to be incorporated into the City's Public Works Standards.
12. Require that all pedestrian and bicycle walkways and bikeways be constructed in a manner that addresses environmental conditions, such as natural, cultural, and historical features.
13. Acquire right-of-way and/or easements to connect existing neighborhoods to each other and specifically to schools and parks with bicycle and pedestrian paths.
14. Require concrete sidewalks on both sides of all streets with appropriate buffering, and with emphasis on safety, accessibility, and functionality, unless other facilities can provide the same services or it is found that sidewalk facilities are not needed for other reasons. The Development Review Board or City Council must approve exceptions.
15. Continue to offer bicycle safety programs through the Parks and Recreation and Sheriff's Departments.
16. As with the formation of the Bicycle Advisory Task Force before the preparation of the original Bicycle and Pedestrian Master Plan, the City will seek the advice of knowledgeable individuals before making significant changes to these Policies or Implementation Measures. This may include bicyclists, pedestrians, and those who use wheelchairs or other assistive devices, as well as others with particular expertise.

Plan Organization

In the following sections, the Plan lays out a **Recommended Bicycle and Pedestrian Network** that connects the places in Wilsonville where people wish to go - parks, bus stops, shopping centers, employment centers, schools, the library, etc -in the easiest and most comfortable manner possible, so that walking and biking in Wilsonville becomes a daily activity for people of all ages and abilities.

Plan Implementation follows, identifying project priorities and phasing, including cost estimates for the bicycle and pedestrian network.

Along with a recommended network of facilities, the Plan also provides a section on **Recommended Bicycle and Pedestrian Programs** that will highlight other methods of addressing the needs of bicyclists and pedestrians in Wilsonville.

This Plan summarizes **Existing Bicycle and Pedestrian Conditions** to establish where Wilsonville is in relation to where the City wants to be in encouraging and providing for bicycle and pedestrian usage. As part of the existing bicycle and pedestrian conditions analysis, the plan identifies **Major Challenges and Opportunities** in the bicycle and pedestrian network and provides recommended solutions for overcoming those gaps and barriers to make Wilsonville a truly great city for bicycling and walking.

Although described briefly in the recommended network, the **Design Guidelines and Standards** chapter expands on the facility types recommended for Wilsonville, and also provides additional information on roadway crossings and signing and striping facilities for bicyclists and pedestrians.

Plan Scope and Public Involvement

The Plan followed a series of research, field, and public process activities from late Spring 2004 to early Summer 2005. The City of Wilsonville has compiled a complete report detailing the public involvement throughout the master planning process for the Bicycle and Pedestrian Plan, the Transit Master Plan, and the Parks and Recreation Master Plan.

Research activities included:

- Assessment of existing bicycling and walking conditions and facilities in Wilsonville.
- Evaluation of bicycle and pedestrian needs, such as safety problems, demographic and geographic population and employment demands, and facility deficiencies.
- Field assessment of missing gaps, system deficiencies, and trail opportunities.
- Environmental conditions and constraints.

Public outreach activities included presentations and discussions at:

- Planning Commission (June 2004 and October 2005)
- Monthly Advisory Committee on Master Planning (ACMP) (September 2004–May 2006)
- Master Plans Visioning Event (September 2004)
- Charbonneau residents meeting (January 2005)
- Community Center meeting (January 2005)
- Meeting with ODOT regarding options for I-5 bridge (January 2005)
- Wood Middle School workshop (February 2005)
- Boeckman Creek Elementary school assembly and follow-up survey (March 2005)
- Meeting with Metro regional trails and open space staff and Three Rivers Land Conservancy (March 2005)
- Rivergreen Neighborhood Association meeting and survey (March 2005)
- Xerox lunchtime meeting with employees who bike to work (March 2005)
- Public meeting (May 2006)

Outreach was also conducted through the following:

- Community Recreation Survey (Fall 2004)
- SMART surveys (Winter 2005)
- Wilsonville Master Planning Update brochure - distributed to all households in Wilsonville (Summer 2005)
- Tabling events (Summer 2005)

Related Plans and Background Documents

Several related planning processes have helped guide the vision and development of the Wilsonville Bicycle and Pedestrian Master Plan. The recommendations from these documents have been incorporated into this Plan to maintain consistency between past and future planning efforts.

Below are summaries of the plans and their relevant goals, objectives, and policies.

Wilsonville Comprehensive Plan (2004 update)

The purpose of the Comprehensive Plan is to guide growth within the city of Wilsonville. The document is broken into four major sections, one of which, Public Facilities and Services, helps define when development can occur by determining what facilities and services must be available to support urban development. A sub-section of this chapter addresses the roads and

the transportation plan as laid out in the TSP. Some of the implementation measures from this sub-section are noted below:

"...Provisions for pedestrian and bicycle travel will be considered as a basic transportation element as well as a recreational element."

"When land is developed which includes a designated pathway, appropriate dedication of right-of-way or easements shall be required. In cases where the proposed development will substantially increase the need for the path, construction may also be required prior to occupancy."

"The City shall encourage development of secondary pathways that are internal to individual developments."

"The City shall...take steps to improve connectivity between existing neighborhoods and between residential areas and traffic generator locations. Also, work to provide more and better options for travel from one side of the freeway, the railroad, and major drainage courses to the other."

City of Wilsonville Parks & Recreation Master Plan (1994)

The Parks and Recreation Master Plan presents a vision for a comprehensive system of parks, recreation centers, trails, shared-use paths, and open space that meets the needs of Wilsonville. Off-street trails are a component of this plan, and in fact, "The single strongest desire within the parks system, as expressed by participants in the first workshop...was the overwhelming public demand for trails. Throughout the planning process and in discussions with many of the various interests, it was clear that a complete and separated pathway system was of critical importance to the success of the Recommended Master Plan." The plan identifies three types of trails - major pathways, minor pathways, and nature trails - with simple design standards listed for each type.

Wilsonville West Side Master Plan (1996)

The Wilsonville West Side Master Plan was intended to guide the development and character of portions of west Wilsonville, particularly Old Town. Chapter III. Transportation and Circulation notes that, "While this (I-5) provides the opportunity for thousands of people to travel to, from and through the City every hour, it

also creates a barrier to effective auto, pedestrian, and bicycle travel from one side of Wilsonville to the other." Another existing condition identified in the Master Plan notes that, "Besides the connectivity issues noted above, other factors that tend to limit walking and bicycling are the design and maintenance of the facilities. Paths, trails, or sidewalks that cause the user to feel vulnerable will tend to go unused. They may not be used because they are too close to a busy street, they are littered (note that bicyclists are especially reluctant to use paths with broken glass or other sharp objects), or even because they are in a location that is too noisy. If the City is going to successfully encourage people to walk or ride bicycles, rather than use their cars, all of these factors will have to be addressed." To address these conditions, some of the policies stated in this section are:

- Increase the numbers of connections between existing streets, trails, and sidewalks where it is possible and in the best interests of the community to do so.
- Require new developments to provide connections between streets, trails, and sidewalks to existing developments where it is feasible to do so.
- Design, construct, and maintain pedestrian, bicycle, and transit systems and streets to make them user-friendly and efficient.

City of Wilsonville Transportation Systems Plan (2003)

The purposes of the Wilsonville Transportation Systems Plan (TSP) are to: Comply with the Oregon Transportation Planning Rule, develop standards for the transportation system, address current problem areas, identify future roadway needs required to support predicted growth, and provide guidelines for future transportation planning. The TSP contains policies and implementation measures designed to fulfill the City's transportation needs through the year 2020.

In a review of the existing transportation conditions, the TSP acknowledges the limited connectivity of bicycle and pedestrian facilities in Wilsonville, which it addresses further in Chapter 5.

Chapter 5 of the TSP: Pedestrian and Bicycle Facilities replaced the 1993 Bicycle and Pedestrian Master Plan. Goal 5.1 is: "To promote non-motorized travel and provide a safe, interconnected system of pedestrian

and bicycle facilities." The policies formulated to support this goal state that the City of Wilsonville shall:

- Continue to improve and expand pedestrian and bicycle facilities, as needed throughout the community, with a focus on improved connectivity within the City and the Metro Regional Bicycle System.
- Ensure that pedestrian and bicycle networks provide direct connections between major activity centers and minimize conflicts with other modes of transportation.
- Regard facilities for bicyclists and pedestrians as important parts of the overall transportation system and not just recreational facilities.
- Increase the bicycle share mode throughout the City and improve bicycle access to the City's transportation system.

This Master Plan builds upon and replaces Chapter 5 of the TSP.

Chapter 6 of the TSP: Transit System, notes that "Pedestrian and bicycle access between transit and destinations can be unnecessarily difficult. When pedestrians must cross large parking lots or walk far out of their way to find a safe path of travel, transit is much less attractive."

Policy 6.1.5 states that the City of Wilsonville shall "Improve pedestrian and bicycle connections to transit facilities."

Wilsonville Development Code (2004)

Chapter 4 of Wilsonville's Code is the Planning and Land Development Ordinance, and is "enacted for the purpose of promoting the general public welfare by ensuring procedural due process in the administration and enforcement of the City's Comprehensive Plan, Zoning, Design Review, Land Division, and Development Standards. There are several sections that relate to bicyclists and pedestrians.

Section 4.155 contains Table 5: Parking Standards, which illustrates the minimum required number of bicycle parking spots based on various land uses. Section 4.177 states that "all streets shall be developed with curbs, utility strips and sidewalks on both sides; or a sidewalk on one side and a bike path on the other side." Section 4.178 establishes Sidewalk

and Pathway Standards, noting the minimum width for sidewalks, as well as the preferred hierarchy of bicycle facilities.

In Chapter 4, Sections 4.500-4.515 address the Willamette River Greenway. General uses permitted outright include those activities that "protect, conserve, enhance, and maintain public recreational, scenic, historical, and natural uses on public and private lands, except that changes of use, intensification of use or development shall require Conditional Use Permit review as provided by this Code." If seeking a conditional use permit, Section 4.514.04, Use Management Standards notes that, "All development after the effective date of this ordinance, except water dependent and water related uses, shall be set back a minimum of 75 feet upland from the top of each bank."

Wilsonville Tract Master Plan and Natural Resources Management Plan (2004)

The Wilsonville Tract Master Plan governs the area now known as the Graham Oaks Natural Area. The Executive Summary states, "The overall intent of the master plan is to protect existing natural resources and enhance or recover ecological systems, while carefully balancing the desire for enjoyment by the public." The stated goals and objectives of the Master Plan include:

- Establish site as a regional destination
- Plan for trail connections to the Wilsonville Tract which includes: connecting the site to future regional trails such as the Tonquin Trail which will connect the Willamette River with the Tualatin River, connecting the site to a future link to the Willamette River, and provide connections to existing neighborhoods, adjacent schools, CREST, Wilsonville Road, and the new Villebois community.
- Comply with the Metro Open Spaces, Parks, and Streams Bond Measure regarding appropriate and compatible recreation activities on the property that protect natural areas by: providing for activities such as walking, picnicking, bicycling, wildlife viewing and educational experiences, providing loop trails within the Tract so that visitors can experience the ecological diversity of the site, and providing trailheads at appropriate locations onsite.
- Provide a safe and direct pedestrian and bicycle connection through the Wilsonville Tract property

from the new Villebois community to the middle and elementary schools.

"The trail system of the Wilsonville Tract consists of one main paved trail as a north-south connector, a secondary crushed rock surfaced inner loop around the central open space and tertiary trail loops of soft surface materials through the forest."

Tonquin Trail Feasibility Study (2004)

The Tonquin Trail Feasibility Study examines the potential alignments for a regional non-motorized trail that links the cities of Wilsonville, Sherwood, and Tualatin. The Tonquin Trail, when built, will connect the Willamette River with the Tualatin River. Overall, much of the Tonquin Trail is feasible to develop as a regional trail. Many portions of the trail will be planned for construction over the next few years. This includes the portion of the trail in the Graham Oaks Natural Area and through portions of Villebois. These segments should be completed by 2008, and will eventually connect the Willamette River and the Coffee Creek Wetlands. There are several trail alignment variations in Wilsonville, depending upon the eventual length of the trail, and where the major trailheads are eventually located. Within Wilsonville, potential starting points for the trail are: the Metro Open Space near Corral Creek, Rivergreen Open Space, the Willamette River Water Treatment Plant Park, Boones Ferry Park, and Memorial Park.

Wilsonville Memorial Park Trails Plan (2004)

The Memorial Park Trails Plan provides a vision for the future trail system within the Park that creates a trail system extending throughout the park to encourage use, improve access, and offer opportunities for passive recreation and exercise. Some of the project goals and objectives are as follows:

- Improve visibility and accessibility of trails for the public.
- Improve trail connectivity of features and activities within the park.
- Improve trail quality and safety.
- Create a hierarchy of trails throughout the park.

Villebois Village Master Plan (2004)

The Villebois Village Master Plan implements the Villebois Village Concept Plan and will serve as a basis for development at Villebois. Villebois will provide a section of the regional Tonquin Trail, connecting Coffee Creek with the Graham Oaks Natural Area. The Master Plan calls for bike lanes on all arterials and collectors within and leading to the development, and at buildout will contain over 47 miles of paths, sidewalks, and bike lanes.

Key Recommendations

Described in more detail throughout this document and summarized in Table 1 are key opportunities that emerged as recommended facilities, programs, and policies.

Table 1. Key Recommendations

Project or Program	Description
Willamette River Crossing	The Willamette River serves as a barrier to bicycle and pedestrian connectivity with Charbonneau and other destinations, such as Champoeg State Park, south of the river. A dedicated bicycle and pedestrian crossing would increase the comfort level and safety for all users. Additionally, the State recently placed an increased emphasis on bicycle tourism, highlighted by the dedication of the Willamette Valley Scenic Bikeway that stretches from Armitage County Park just north of Eugene to Champoeg State Park. Wilsonville is well positioned to capitalize on its proximity to the Scenic Bikeway, and the establishment of a bicycle and pedestrian route across the Willamette River would only serve to highlight the City's accessibility and bicycle-friendly environment.
I-5 Crossing	Wilsonville, located on both sides of I-5, takes full advantage of its proximity to this major transportation route. However, the presence of the freeway greatly decreases the connectivity between east and west Wilsonville, channeling all travelers regardless of mode to one of four crossings, making it more difficult for bicyclists and pedestrians to move around comfortably and quickly. Improving the crossings, and creating new crossing opportunities, would encourage more people to bike and walk.

Project or Program	Description
Wayfinding/Signing Program	Landmarks, natural features, and other visual cues help bicyclists, pedestrians, and motorists to navigate through a town or city . A signage system for these destinations is a key component of a navigable environment that would also enhance the identity of Wilsonville. Implement a signing program to provide bicycle and pedestrian scale-directional signage to important destinations throughout Wilsonville.
Safe Routes to School	Establishing a Safe Routes to School program to encourage and educate students on the best and safest ways to get to school and other destinations by walking or bicycling.
Non-Motorized Transportation Coordinator	Establishing a position within the City for someone to directly oversee implementation, education, and outreach regarding walking, bicycling, and transit use. Coordinate with SMART to expand the SMART Options program's implementation, education and outreach regarding walking, bicycling and transit use.
Charbonneau Pedestrian Path	Completing the pedestrian path around French Prairie Loop and upgrading it in locations will benefit all residents and visitors.
Tonquin Trail	A regional shared use trail that will connect Tualatin and Sherwood with Wilsonville. This trail will serve all residents of Wilsonville, especially those on the west side. The trail passes through the Coffee Creek Wetlands, Villebois, and the Graham Oaks Natural Area.
Boeckman Creek Trail	A regional shared use trail that will provide off-street north-south access on the east side of Wilsonville. Connecting parks, schools, neighborhoods, shops and employment centers, the Boeckman Creek Trail will serve residents and visitors to Wilsonville.

Plan Concept

The Bicycle and Pedestrian Master Plan uses a systematic concept to create a series of interconnected loops throughout Wilsonville. This concept enables users to connect to most destinations on a variety of surfaces; from earthen walking trails to sidewalks and bicycle lanes to paved shared use paths. The loop concept also allows recreational users to create personal loops, depending on how long or far they wish to travel. The new system—Regional Trails, Community Walkways and Bikeways, and Local Access Trails—will give community members a wide variety of options for commuting, running errands, exercise and recreation, leisure, and nature viewing.

Regional Trails

Regional trails will connect Wilsonville to adjacent communities—Tualatin, Sherwood, Lake Oswego, and the greater Portland metropolitan region—and to regionally significant destinations such as the Willamette River, Champoeg Park, the Southern Willamette Valley, and wine country. There are two proposed regional trails in the Wilsonville area currently on the Regional Trails map and in Metro's Regional Transportation Plan (RTP) that are eligible for regional funding.

- **Tonquin Trail.** This trail will run south from the Tualatin River National Wildlife Refuge through Sherwood and Wilsonville to the Willamette River Greenway.
- **Willamette River Greenway Trail.** Part of the Willamette River Greenway Vision. This trail will run along the west side of the Willamette River connecting Wilsonville with the Canby Ferry and the Willamette Narrows Greenway Trail. Heading east, the Willamette River Greenway Trail is considered an inter-regional trail, connecting the Portland metropolitan regional area with the Willamette Valley and points south. The Willamette River Greenway Trail provides planned and existing access along the lower 40 miles of the river as first envisioned by Governor Tom McCall. The Willamette River Greenway Trail offers a direct way to enjoy Oregon's longest river and to encourage involvement in enhancing and protecting its valuable attributes.

In addition, there is the opportunity for a number of other regional trails. The Boeckman Creek Trail would connect the east side of Wilsonville to schools, population and employment centers with the Stafford Trail, a regional trail cutting through the Stafford Basin from the Tualatin River south to the Willamette River. Other potential regional trails include: Boone Bridge/ Willamette River Trail and the Wiedeman Road Trail.

Regional trails generally have their own right-of-way. Users should have minimal conflict with automobile traffic. These trails must be designed to meet the Americans with Disabilities Act (ADA) standards, American Association of State Highway and Transportation Officials (AASHTO) and the Manual on Uniform Traffic Control Devices (MUTCD) standards, the Oregon Bicycle and Pedestrian Plan, Oregon Department of Transportation (ODOT) standards and other State and Federal guidelines. Regional trails serve bicyclists, pedestrians, wheelchair users, skaters, and others.

Community Walkways and Bikeways

Community walkways and bikeways link and improve access within important Wilsonville land uses and areas of interest, including retail areas (Town Center, Argyle Square, Lowrie's Marketplace), schools (Wilsonville High, Inza Wood Middle school, Boeckman Creek Primary, Boones Ferry Primary), parks and natural areas, SMART and TriMet stops, churches, employment districts, the library, and other desirable areas. They also connect users to adjacent communities and the regional trail system.

The design of community walkways and bikeways varies according to the functional classification of the facility as well as the average daily traffic (ADT) on the adjacent roadway. Most community walkways and bikeways in Wilsonville are either off-street shared use paths or separate facilities (i.e., a sidewalk or walkway for pedestrians and on-street bike lanes for bicyclists) that meet State and Federal standards. Safety for bicyclists and pedestrians on these routes is paramount, as they often parallel or intersect busy roadways. However, some community pathways and bikeways follow neighborhood streets, in which case pedestrians are accommodated with a sidewalk or shared use path and bicyclists share the roadway with vehicles. The majority of proposed community pathways and bikeways are on arterial and collector streets and will be implemented if and when the roadway is widened or improved.

Local Access Trails and Accessways

Local access trails primarily serve pedestrians with safe and direct connections to local features, such as schools, parks and community centers. Some local access trails may also be appropriate for bicycling and other wheeled forms of mobility.

Local trails may be sidewalks or accessways providing short connections from surrounding neighborhoods to parks and schools. In addition, local access trails are often located within parks (e.g., Memorial Park and Town Center Park). Trails within parks are primarily earthen or crushed gravel, but may also be a sidewalk or shared use path. There are four categories of local trails: City Trails, Natural Trails, Accessways, and Waterway Trails. The following page contains descriptions of each local trail category.



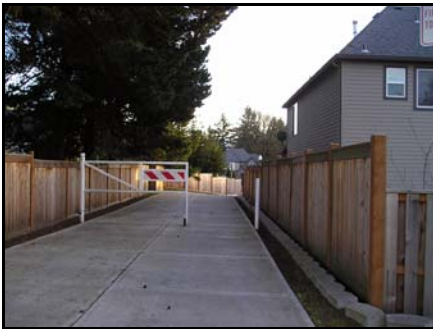
City Trails

City trails are typically paved or made of a smooth surface to accommodate most trail users. These trails are typically found in developed parks and recreational areas such as Memorial Park. Some city trails may not be able to maintain a 5% grade to accommodate disabled users due to topographical constraints (steep grades, constrained widths, etc.). At least one trail in the park should be constructed to ADA standards to provide for all trail users.



Natural Trails

Natural trails are soft-surface trails typically found in undeveloped parks and natural areas and aim to provide a natural outdoor experience while providing for natural resource protection. These trails are usually for pedestrians only, but some trails could be open to mountain bikes. Natural trails do not need to be ADA-compliant, given the additional topographical and environmental constraints of providing access to many natural areas.



Accessways

Accessways provide short bicycle and pedestrian connections. Accessways can also be unique. They can be stairs, a bridge, alley or passage connecting gardens, courtyards, or other urban spaces. Accessways should be constructed to ADA standards to provide for all non-motorized users.



Waterway Trails

Waterway trails are water corridors dedicated to water activities augmented with special features, such as small craft boat ramps, interpretive areas, and public beach sites for camping and picnicking. The intent of the water trail is to create awareness, preserve public access to the waterway, and provide a natural experience.



2. Recommended Bicycle and Pedestrian Network

Introduction

Project Matrix

Priority Projects



2. Recommended Bicycle and Pedestrian Network

Introduction

The recommended bicycle and pedestrian network provides a comprehensive network of trails, pathways and bikeways that connect to schools, parks, community centers, business districts, libraries, and natural resources. The network serves multiple users and interests, and improves access for residents of varying physical capabilities, ages and skill levels.

The following details of the network should be noted:

- The conceptual **Bicycle and Pedestrian Network Map** (Map 1 on page 19) includes both existing facilities (shown as solid lines) and recommended facilities (shown as dotted lines). Some of the recommended facilities exist in previous planning documents, such as the Tonquin Trail Feasibility Study or the Memorial Park Trails Plan, while other facilities are being recommended for the first time in this plan. Changes to documents such as the TSP may be required to achieve a number of recommendations contained in this plan. Where a dotted line and a solid line are side-by-side, this indicates that the facilities are partially complete, but something is lacking. For example, the location may have bike lanes, but no sidewalks, or perhaps a sidewalk on only one side of the street.
- All trail alignments shown on Map 1 are conceptual in nature and subject to adjustment, field verification, and additional studies.
- While this Plan strives to provide recreational and commuter options for all residents of Wilsonville, not all desired activities could be fully accommodated based on geographic constraints. So, while mountain biking is fully encouraged on all regional and community shared-use paths built to the appropriate standards, no dedicated single-track facilities are identified in Wilsonville. Similarly, while equestrian use may be permitted on specific segments of regional trails in Wilsonville (as along the Springwater Corridor in Portland), no dedicated equestrian trails have been identified in this Plan.
- Key terms used in this plan:

Shared-Use Path - An off-street facility designed for multiple users, including pedestrians, bicyclists, in-line skaters and other non-motorized users. Also known as a multi-use path (as in the Oregon Bicycle and Pedestrian Plan) or multi-use trail. A shared-use path is designed to meet ADA guidelines.

Walkway - A walkway, as defined by the Oregon Bicycle and Pedestrian Plan, is "a transportation facility built for use by pedestrians and persons in wheelchairs." In some cases, this may be a separated path from the roadway, while in other cases it may refer to a sidewalk adjacent to the roadway.

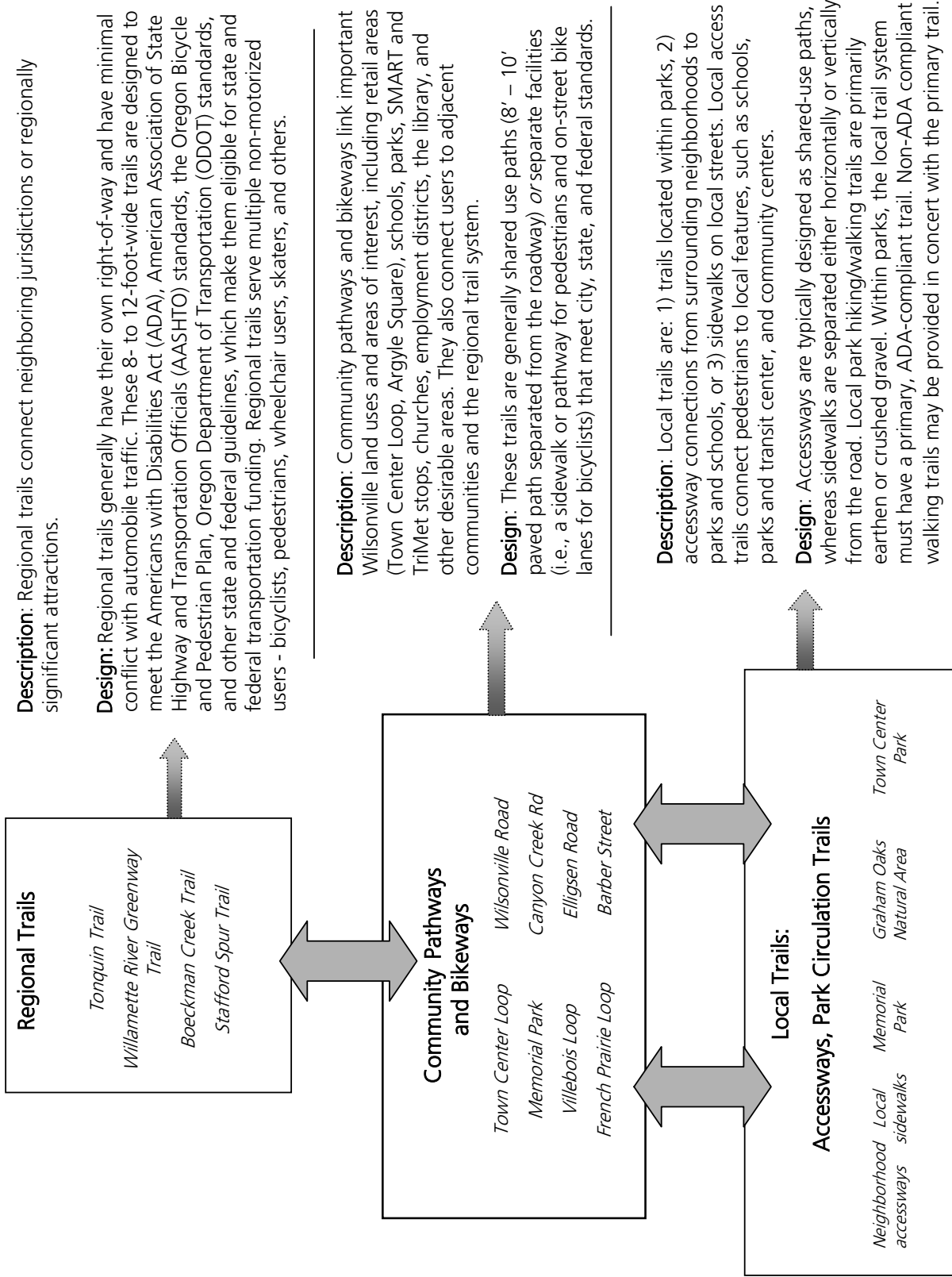
Bikeway - A facility designed for bicyclists. As an on-road facility, it may be bike lanes, wide outside lanes, or a signed shared roadway. In some cases, this may refer to a separated path. According to the Oregon Bicycle and Pedestrian Plan, a bikeway is "created when a road has the appropriate design treatment to accommodate bicyclists, based on motor vehicle traffic volumes and speed."

Local trail - Local trails are 1) trails located within parks; 2) accessway connections from surrounding neighborhoods to parks and schools; or 3) sidewalks on local streets.

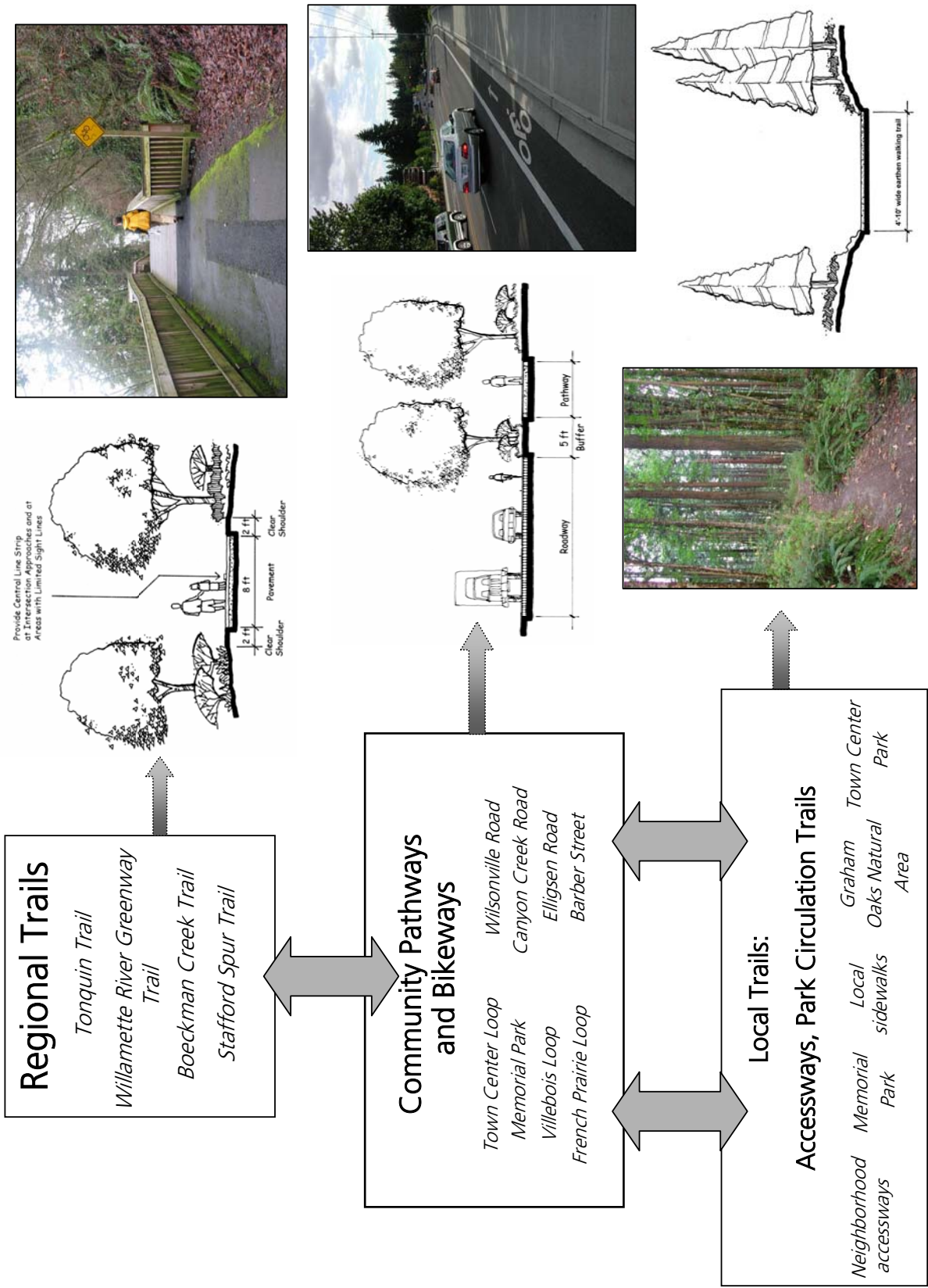
Accessways - Accessways are local paths that provide a direct connection from cul-de-sacs and other disconnected developments to parks and other desirable destinations. These will be determined through development review and permitting processes. Since accessway locations cannot be known until the development applicant provides a site plan, future accessways are not shown on the map.

- Many of the alignments shown are largely conceptual. Once a corridor is selected for an off-street shared-use path, the corridor will need further study and design. The exact location of a path may change as a result.

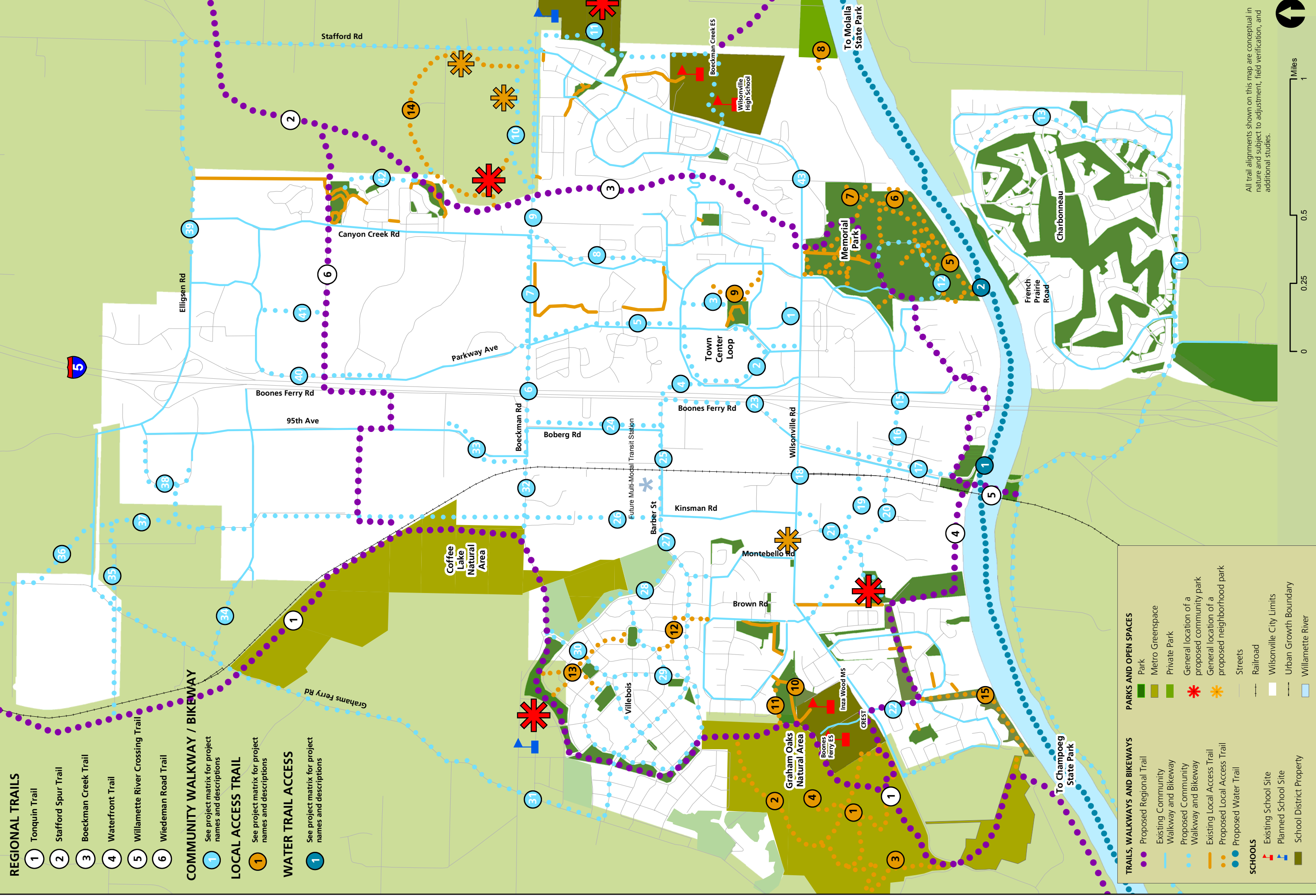
A brief description of the types of facilities recommended in the Bicycle and Pedestrian Master Plan and simple design guidelines for each of those facilities follows. These are described more fully in the Design Guidelines and Standards chapter.



2. Recommended Bicycle and Pedestrian Network



Map 1. Wilsonville Bicycle and Pedestrian Concept Map



All trail alignments shown on this map are conceptual in nature and subject to adjustment, field verification, and additional studies.



2. Recommended Bicycle and Pedestrian Network

WILSONVILLE BICYCLE AND PEDESTRIAN MASTER PLAN PROJECT MATRIX								
PROJECTS								
ID	Project	From - To	Type	Description	Length (miles)	Lead Responsibility	Priority	Planning Level Cost Estimate (Excluding Property Acquisition/Easement) See Cost Estimate Worksheet for Cost Breakdown
REGIONAL TRAILS								
R1*	Tonquin Trail	Tualatin / Sherwood - Metro Greenspace (Waterfront Trail connection)	Shared use path on-street	Regional trail would connect Tualatin / Sherwood with west Wilsonville, Coffee Lake Natural Area, Villebois and the Graham Oaks Natural Area. Connections to the trail will be provided at Wilsonville Road, throughout Villebois, Boeckman Road, Cahalin Road, and BPA Powerline easement	4.0	Metro, Wilsonville, Tualatin, Sherwood, Villebois	1	\$2,900,000
R2	Stafford Spur Trail	Canyon Creek Park to planned Stafford Trail (Boeckman Creek Trail / Wiedeman Trail connection)	Shared use path	Regional trail would connect the neighborhoods and employers of east Wilsonville with Lake Oswego and the planned regional Stafford Trail.	3	Metro, Wilsonville, Lake Oswego, Three Rivers Land Conservancy	3	\$1,600,000
R3*	Boeckman Creek Trail	Memorial Park to Canyon Creek Park (Stafford Spur Trail / Wiedeman Trail connection)	Shared use path, boardwalk	Regional trail would follow Boeckman Creek north from Memorial Park, connecting with the existing community pathway crossing Boeckman Creek and continuing north to Canyon Creek Park, providing an off-street north-south alternative. Will require a comprehensive public process prior to implementation.	2.4	Wilsonville, Metro	1	\$1,900,000
R4	Waterfront Trail	Metro Greenspace to Memorial Park (connecting Tonquin Trail and Boeckman Creek Trail)	Shared use path on-street	Regional Trail would connect the Metro Greenspace on the western edge of Wilsonville with the Water Treatment Plant, Boones Ferry Park and Memorial Park while providing greater access and opportunities to view the Willamette River. Future waterfront trail envisioned only if or when land-use changes to a more compatible use. Until that time, due to the ownership and operation of Willamette Concrete, a trail is not appropriate. Any trail through private property will require the negotiation of an easement from the property owners before any trail will be considered.	2.8	Wilsonville, Metro	2	\$1,400,000
R4a	Memorial Park to Boones Ferry Park Trail Improvements	Underneath I-5	Shared use path	Improving the condition of the trail as it passes underneath the I-5 Boone Bridge by removing the Jersey barriers and installing bollards, widening the trail to 10 feet, adding appropriate pedestrian features such as benches, and altering the grade of the path underneath the underpass to make it more easily accessible.	0.14	Wilsonville, ODOT	2	\$50,000
R5*	Willamette River Bridge	Connection across Willamette River	shared use bridge	Regional trail would provide non-motorized users a safe and comfortable alternative to using I-5 when crossing the Willamette River.	0.9	Wilsonville, Metro	1	\$7,000,000 - \$12,000,000
R6	Wiedeman Road Trail	Canyon Creek Park to Coffee Lake Natural Area (Tonquin Trail / Boeckman Creek Trail, Stafford Spur Trail connection)	Shared use path on street	Regional trail would connect Coffee Lake Natural Area and the Tonquin Trail with Canyon Creek Park and the Boeckman Creek Trail and Stafford Spur Trail. Regional trail provides an east-west alternative to either Elligsen Road or Boeckman Road.	2.0	Wilsonville, Metro, Clackamas County	varies	\$4,400,000
R6a	Wiedeman Road Trail - Phase 1	Canyon Creek Rd to Parkway Ave	Shared use path	Portion of the regional trail that would provide an off-street connection from Parkway Ave near the Xerox campus to the Canyon Creek Park and the residential section Wilsonville	0.6	Wilsonville	1	\$330,000
R6b	Wiedeman Road Trail - Phase 2	I-5 to Tonquin Trail	Shared use path on-street	Portion of trail which would cross I-5 on an overpass connecting to the Tonquin Trail utilizing primarily on-street connections on Boones Ferry Rd and Freeman Dr.	1.0	Wilsonville, Metro	2	\$3,300,000

WILSONVILLE BICYCLE AND PEDESTRIAN MASTER PLAN PROJECT MATRIX								
PROJECTS								
ID	Project	From - To	Type	Description	Length (miles)	Lead Responsibility	Priority	Planning Level Cost Estimate (Excluding Property Acquisition/Easement) See Cost Estimate Worksheet for Cost Breakdown
R6c	Wiedeman Road Trail - Phase 3	Canyon Creek Rd to Stafford Spur Trail	Shared Use path	Portion of the regional trail that would provide an off-street connection from Canyon Creek Rd through Canyon Creek Park and connect with the Boeckman Creek Trail and the Stafford Spur Trail.	0.4	Wilsonville, Metro	3	\$700,000
COMMUNITY WALKWAYS AND BIKEWAYS								
C1**	Town Center Improvement Package**	Town Center	Crossings, intersection improvements	Improve and encourage pedestrian activity and safety within Town Center by creating more direct connections between destinations, improving accessibility to civic uses, retrofitting sidewalks with curb ramps, highlighting crosswalks with colored pavement or something similar.	n/a	Wilsonville	1	\$93,000
C2**	West Town Center Loop	Wilsonville Road east on Town Center Loop Rd to Parkway Ave	shared use path	Expanding the width of the current sidewalk on the interior of Town Center Loop to 10 ft would create a shared use path that would provide greater safety and accessibility to Town Center for pedestrians and bicyclists.	0.65	Wilsonville	1	\$347,000
C3**	Town Center Park Trail	Town Center Loop E to Town Center Park	shared use path	This trail would utilize a portion of an easement owned by the city next to the post office to create a greater connection to the park, the post office, and other businesses around Town Center.	0.16	Wilsonville	2	\$71,000
C4	Town Center Loop Bridge	Boones Ferry Road to Town Center Loop W	bicycle and pedestrian bridge	Provides an additional connection across I-5, connecting users with Town Center Loop and the businesses and neighborhoods on the east side of Wilsonville.	0.1	Wilsonville	2	\$3,875,000
C5	Parkway Avenue	Boeckman Road to Town Center Loop Drive	signed route with wide outside lanes	This stretch of Parkway Avenue has a three-lane design, with one lane in each direction plus a center turn lane. Reducing the width of the center turn lane would allow for the creation of wide outside lanes to be shared by vehicles and bicycles.	0.56	Wilsonville	2	\$23,000
C6*	Boeckman Road Bridge	Parkway Avenue to Bobberg Road	bicycle and pedestrian bridge	Provides an additional bicycle and pedestrian connection across I-5, connecting users with major employers, the future site of the commuter rail, and access to Villebois.	0.1	Wilsonville	1	\$3,875,000
C7	Boeckman Road	Parkway Ave to Canyon Creek Rd	Bike lanes and sidewalks	Boeckman Rd is a fairly high speed collector with no provisions for bicyclists or pedestrians.	0.4	Wilsonville	1	\$500,000
C8	Canyon Creek extension	Boeckman Creek Road to Vlahos Drive	Bike lanes and sidewalks	Provides greater connectivity from northeast Wilsonville neighborhoods with Town Center Loop and the residential development just north of Vlahos Drive. This project will likely occur during the development stage as the roadway is extended.	0.56	Wilsonville	1	\$443,000
C9	Boeckman Road	Canyon Creek Road to Wilsonville Road	Bike lanes and sidewalks	This section of Boeckman Road has two 12-foot wide motor vehicle lanes with a sidewalk along a portion of the south side. As Wilsonville continues to grow, this is a vital link in the overall connectivity of the bicycle and pedestrian network.	0.69	Wilsonville	1	\$878,000
C10	Frog Pond	Canyon Creek Road to Wilsonville Road	shared use path	Providing an off-street alternative to Boeckman Road, this trail connects with the proposed community park, linking neighborhoods and schools with the parks in the Frog Pond area.	0.52	Wilsonville	2	\$282,000

2. Recommended Bicycle and Pedestrian Network

WILSONVILLE BICYCLE AND PEDESTRIAN MASTER PLAN PROJECT MATRIX								
PROJECTS								
ID	Project	From - To	Type	Description	Length (miles)	Lead Responsibility	Priority	Planning Level Cost Estimate (Excluding Property Acquisition/Easement) See Cost Estimate Worksheet for Cost Breakdown
C11	School Trail	Boeckman Creek Elementary school to planned school site	shared use path	Providing an off-street alternative to Wilsonville Road, this trail connects Boeckman Creek Elementary school and the nearby neighborhoods with the planned school site, Boeckman Road, and the planned park sites	1.39	Wilsonville	2	\$685,000
C12	Memorial Park Central Loop Trail	Memorial Park	shared use path	A shared use path in the heart of Memorial Park. See the Memorial Park Master Plan for further details.	0.75	Wilsonville	2	\$328,000
C13*	French Prairie Drive	Country View Lane to Miley Road	shared use path	French Prairie Drive has an existing five-foot wide path that ends part of the way around the roadway. This project extends the path the entire length of the road, increasing connectivity for Charbonneau residents.	0.84	Wilsonville	1	\$1,110,000
C14	Miley Road	I-5 interchange to French Prairie Drive	Bike lanes and sidewalks	This project will create a complete loop around Charbonneau for bicyclists and pedestrians as well as connecting regional bicyclists with bike lanes on Airport Rd.	1.2	Wilsonville	1	\$950,000
C15	Memorial Drive / 5th Street overpass	5th Street to Memorial Drive	bicycle and pedestrian overpass	Provides an additional connection across I-5, connecting users with the Boone Bridge, Old Town neighborhood center, and Memorial Park.	0.1	Wilsonville	3	\$6,200,000
C16	5th Street	Boones Ferry Road to I-5 overpass	Signed bike route, sidewalks	Sidewalks from Boones Ferry Road to the proposed I-5 overcrossing. Bike lanes will be provided with new development. Traffic counts should be reevaluated during project implementation.	0.18	Wilsonville	3	\$52,000
C17	Boones Ferry Road	Wilsonville Road to Boones Ferry Park	Bike lanes and sidewalks	A bike lane and sidewalk exist on the west side of Boones Ferry Road south of Wilsonville Road for a short segment, and then appear again in front of the newer developments on the west side of the road in Old Town. Boones Ferry Road is one of the few connections to Boones Ferry Park and old town Wilsonville.	0.44	Wilsonville	2	\$475,000
C18	Railroad Tracks Crossing	Railroad Tracks @ Wilsonville Road crossing	Crossing	Provides a safe, two-stage crossing of Wilsonville Road just to the west of the railroad tracks by providing striping and a pedestrian refuge island to connect the commercial and residential land uses on the north side of the road with the commercial development at Boones Ferry Road.	0.01	Wilsonville	3	\$23,000
C19	Brown Road	Brown Road to Bailey St	Off-Street Path / Bike lanes and sidewalks	Project type dependent upon extension of Brown Road or 5th Street. With no road extension, an off-street path recommended connecting Brown Road with Bailey St across the railroad tracks. With road extension, bike lanes and sidewalks. Provides east-west connection south of Wilsonville Road, increasing access to shops, neighborhoods, and the Water Treatment Plant.	0.68	Wilsonville	2	\$325,000
C20	5th Street extension	Brown Road to Boones Ferry Road	Off-Street Path / Bike lanes and sidewalks	Project type dependent upon extension of Brown Road or 5th Street. With no road extension, an off-street path recommended. With road extension, bike lanes and sidewalks. Provides east-west connection south of Wilsonville Road, increasing access to shops, neighborhoods, and the Water Treatment Plant.	0.35	Wilsonville	2	\$172,000
C21	Water Treatment Plant connection	Krisman Road to Water Treatment Plant	Off-street path	Extends the existing off-street path leading from the Water Treatment Plant to the T intersection of Krisman and Wilsonville Road. Provides greater connectivity from homes and businesses north of Wilsonville Road to the Water Treatment Plant and the proposed regional Waterfront Trail.	0.49	Wilsonville	1	\$240,000

WILSONVILLE BICYCLE AND PEDESTRIAN MASTER PLAN PROJECT MATRIX

PROJECTS									
ID	Project	From - To	Type	Description	Length (miles)	Lead Responsibility	Priority	Planning Level Cost Estimate (Excluding Property Acquisition/Easement) See Cost Estimate Worksheet for Cost Breakdown	
C22	Willamette Way East sidewalks	along Willamette Way East	sidewalks	Fill in gaps in the sidewalk network to provide safer routes to the schools from the neighborhoods south of Wilsonville Road.	0.1	Wilsonville	1	\$30,000	
C23	Barber Street / Boones Ferry Road	Boberg Road via Barber Street along Boones Ferry Road to Wilsonville Road	Bike lanes and sidewalks	Provide bike lanes and sidewalks on this section of Boones Ferry Road and Barber Street, as they provides a more direct connection from the existing bicycle network to existing and proposed crossings of I-5, as well as Boones Ferry Park and the proposed Boone Bridge.	0.58	Wilsonville	3	\$625,000	
C24	Boberg Road	Boeckman Road to Barber Street	Sidewalks	Boberg Road lacks sidewalks along most of the eastern edge of the roadway, and as a transit route, SMART users should be able to get to their destinations easily.	0.48	Wilsonville	1	\$365,000	
C25	Barber Street	Boberg Road to Kinsman	Bike lanes and sidewalks	Provide bike lanes and sidewalks on both sides of Barber Street.	0.32	Wilsonville	1	\$431,000	
C26	Kinsman Road extension	Barber Street to Day Rd	Bike lanes and sidewalks	Provides north-south connection to proposed site of commuter rail station. Provides connection to Tonquin Trail. Will be installed along with the road project.	2.13	Wilsonville	2	\$2,200,000	
C27	Barber Street	Kinsman to Grahams Ferry Rd	Bike lanes and sidewalks	Provide bike lanes and sidewalks on both sides of Barber Street through Villebois. This project will be completed during development of Villebois.	1.26	Wilsonville	2	\$1,380,000	
C28	Villebois Open Space	Barber St to Villebois Drive	Shared use path	A shared use path through the open space on the eastern edge of Villebois. Project will be completed during Villebois development.	0.5	Wilsonville	2	\$233,000	
C29	Villebois Loop	Barber Street to Barber Street	Signed bike route and sidewalks	Provide signed bike route and sidewalks on this main circulation road through Villebois connecting the greenway, parks and the village center. Will be completed during development of Villebois.	1.32	Villebois	2	\$800,000	
C30	Villebois Drive	Boeckman Road to Villebois Loop	Bike lanes and sidewalks	Provide bike lanes and sidewalks on primary northern entrance to Villebois. Project will be completed during Villebois development.	0.29	Villebois	2	\$320,000	
C31	Grahams Ferry Road	Day Road to Tooze Road	Bike lanes and sidewalks	A major north south access road into Wilsonville that currently has no provisions for bicyclists or pedestrians. Providing dedicated facilities provides additional choices for bicycle commuters.	1.8	Wilsonville	1	\$1,980,000	
C32	Boeckman Road extension	95th Avenue to Tonquin Trail	Bike lanes and sidewalks	This portion of Boeckman Road lacks both bike lanes and sidewalks. Boeckman Road will be a primary route into Villebois, and requires adequate facilities for bicyclists and pedestrians.	0.27	Wilsonville	1	\$215,000	
C33	95th Avenue	spot locations	sidewalks	95th Avenue has complete bike lanes in both directions but is lacking sidewalks in several locations, which makes access to transit difficult and hazardous at times.	0.28	Wilsonville	1	\$80,000	

2. Recommended Bicycle and Pedestrian Network

WILSONVILLE BICYCLE AND PEDESTRIAN MASTER PLAN PROJECT MATRIX									
PROJECTS									
ID	Project	From - To	Type	Description	Length (miles)	Lead Responsibility	Priority	Planning Level Cost Estimate (Excluding Property Acquisition/Easement) See Cost Estimate Worksheet for Cost Breakdown	
C34	Clutter Road	Garden Acres to Grahams Ferry Rd	Bike lanes and sidewalks	Provides a safe connection through the northern industrial area of Wilsonville.	0.3	Wilsonville	3	\$347,000	
C35	Cahalin Road (new road)	Krisman Rd to Tonquin Trail	Bike lanes and sidewalks	Provides a safe connection through the northern industrial area of Wilsonville. May provide additional connection to the Tonquin Trail. <i>This project will be completed during road construction.</i>	0.65	Wilsonville	3	\$690,000	
C36	BPA Powerline Trail	Day Road to Tonquin Trail	shared use path	This trail connects bicyclists and pedestrians along Day Rd with the Tonquin Trail. Provides Tonquin trail users access to the northern industrial area of Wilsonville.	0.85	Wilsonville	2	\$490,000	
C37	Area 42 Trail	Krisman Rd to Day Rd	Shared use path	This trail was outlined in the <i>Preliminary Urban Reserve Plan Area 42</i> and <i>North Wilsonville Industrial Area Proposed Concept Plan</i> providing a connection to the BPA powerline easement. Provides an off-street connection through the industrial lands.	0.4	Wilsonville	2	\$215,000	
C38	Commerce Circle	95th Avenue	sidewalks	Commerce Circle serves north Wilsonville as a transit route, and major portions of the roadway lacks sidewalks on one or both sides.	0.34	Wilsonville	3	\$98,000	
C39	Elligsen Road	shopping center to city limits	sidewalks and bike lanes	Provide bike lanes and sidewalks on major east-west street in the northern section of the city to connect residential areas with the commercial shopping center.	0.26	Wilsonville	3	\$160,000	
C40	Parkway Avenue	Xerox Drive to Parkway Center Drive	Bike lanes and sidewalks	Within the City, the only north-south roads east of I-5 are Canyon Creek Road and Parkway Avenue. This section of Parkway Avenue needs improvement through the addition of bicycle and pedestrian facilities.	0.47	Wilsonville	1	\$515,000	
C41	Parkway Center Connector	Wiedeman Road Trail to Parkway Center Drive	shared use path	As the remaining parcels become developed, the Parkway Center Connector provides a connection from the regional trail system to the nearby employment centers, as well as Argyle Square.	0.25	Wilsonville	2	\$117,000	
C42	Canyon Creek Trail	Canyon Creek Park to Boeckman Creek Trail	shared use path	This shared use path connects Canyon Creek Park with Boeckman Creek Trail and the neighborhoods to the south. The trail also provides greater connectivity to proposed parks in the Frog Pond Area.	0.34	Wilsonville	3	\$198,000	
C43	Rose Lane Crossing	Rose Lane @ Wilsonville Road crossing	Crossing	Provides a safe, two-stage crossing of Wilsonville Road at Rose Lane by providing striping and a pedestrian refuge island to connect the church and residential land uses on the north side of the road with Memorial Park.	0.01	Wilsonville	3	\$46,500	
LOCAL TRAILS									
L1	Center Loop Trail	Graham Oaks Natural Area	natural trail	The trail circumnavigates the main open space of the tract. The trail will pass through five different ecotypes and located adjacent to wetlands with viewing blinds for looking at wildlife in the tract. A paved section from Wilsonville Rd to the Tonquin Trail will be provided.	1.25	Wilsonville, Metro	1	\$410,000	
L2	Triangle Forest Trail	Center Loop Trail to Tonquin Trail	natural trail	This trail connects to the Center Loop Trail, taking users through the wooded portion of the site, allowing visitors to experience the remaining old growth trees and the forested riparian corridors.	0.6	Wilsonville, Metro	1	\$200,000	
L3	Indian Plum Creek Trail	Tonquin Trail to Center Loop Trail	natural trail	Connecting Wilsonville Road with Tonquin Trail and the Center Loop Trail, this trail goes by two creeks, Indian Plum Creek and Legacy Creek.	0.55	Wilsonville, Metro	1	\$190,000	

WILSONVILLE BICYCLE AND PEDESTRIAN MASTER PLAN PROJECT MATRIX

PROJECTS									
ID	Project	From - To	Type	Description	Length (miles)	Lead Responsibility	Priority	Planning Level Cost Estimate (Excluding Property Acquisition/Easement) See Cost Estimate Worksheet for Cost Breakdown	
L4	Lone Oak Trail	Center Loop Trail	natural trail	A trail leading to "The Lone Oak", a remnant Oregon white oak which stands in the middle of the agricultural field located in the central portion of the natural area.	0.1	Wilsonville Parks	1	\$21,000	
L5	River Trail	Memorial Park Center Loop Trail	natural trail	The trail will connect to the boat dock and feature several river overlooks with benches. The River Trail will connect with the Center Loop Trail and the Homestead Trail.	0.62	Wilsonville Parks	2	\$127,000	
L6	Kolbe Homestead Trail	River Trail to Memorial Park Center Loop Trail	natural trail	An interpretative route offering information and a tour of the historic Kolbe homestead.	0.44	Wilsonville Parks	2	\$62,000	
L7	Klein Homestead Trail	Kolbe Homestead Trail	natural trail	An interpretative route offering information and a tour of the historic Klein homestead.	0.31	Wilsonville Parks	2	\$62,000	
L8	Park Access Trail	Rose Lane	low volume roadway	Dependent upon a long-range plan for the Meridian Landing state-controlled property just east of the current Wilsonville city boundary. Would connect via an easement from Montgomery Way. Would involve extensive public process before any actual construction occurred.	0.45	Wilsonville	3	\$12,000	
L9**	Town Center Loop	Town Center Loop	city trail	Connects Clackamas Community College, the new City Hall and open space	0.25	Wilsonville	2	\$52,000	
L10	Park @ Merryfield Trail	Camelet Street to Inza Wood Middle School	city trail	Widen and stripe the trail leading from the neighborhood through the Park at Merryfield and connecting with Inza Wood Middle School and Boones Ferry Primary School.	0.1	Wilsonville	1	\$47,000	
L11	Tonquin Connector	Tonquin Trail to Park @ Merryfield	natural trail	Connects the regional Tonquin Trail with the Park @ Merryfield and the nearby homes.	0.15	Wilsonville	2	\$30,000	
L12	Villebois Loop Trail	Villebois Greenway to Tonquin Trail	city trail	Connecting the Villebois Greenway and the Tonquin Trail with the residential areas of Villebois as well as the Village center. To be completed during construction of Villebois.	0.84	Villebois, Wilsonville	3	\$172,000	
L13	School Trail	Planned school site to Barber Street	city trail	Connects the proposed school site with the Tonquin Trail, the Coffee Lake Natural Area and two primary routes into Villebois, Boeckman Road and Barber Street. To be constructed during construction of Villebois.	1.06	Villebois, Wilsonville	3	\$217,000	
L14	Frog Pond Loop	Proposed community park	city trail	Connects three proposed parks with the neighborhoods and the proposed regional Boeckman Creek Trail.	1.18	WWLSD, Wilsonville	2	\$281,000	
L15	Rivergreen Trail	Tonquin Trail / SW Willamette Way to Waterfront Trail	natural trail	A natural trail providing access to the river for surrounding residents. This trail may or may not connect to the existing Metro property and the proposed Tonquin Trail. This trail would require an easement from the Rivergreen HOA to locate the trail through their common property.	0.65	Wilsonville	3	\$251,000	
Total								\$56,820,000	

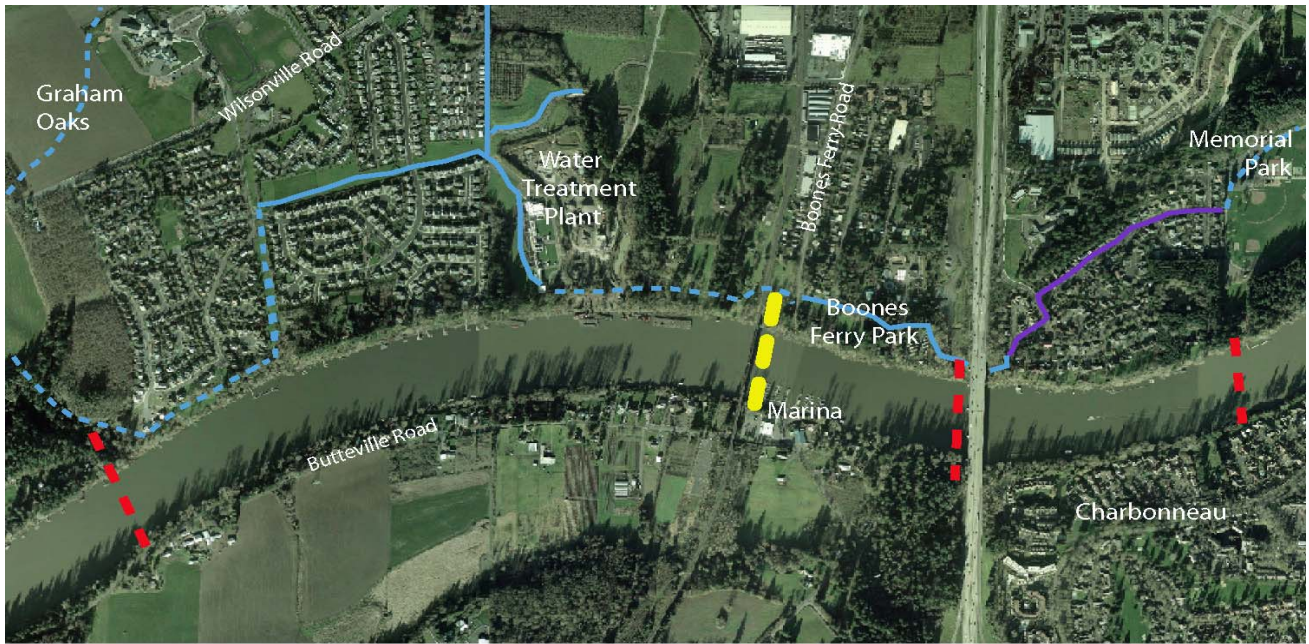
* Additional information about these projects may be found on pages 28-39.

** Additional information about these projects and other Town Center Loop improvements may be found in Chapter 6, "Key Challenges and Opportunities."

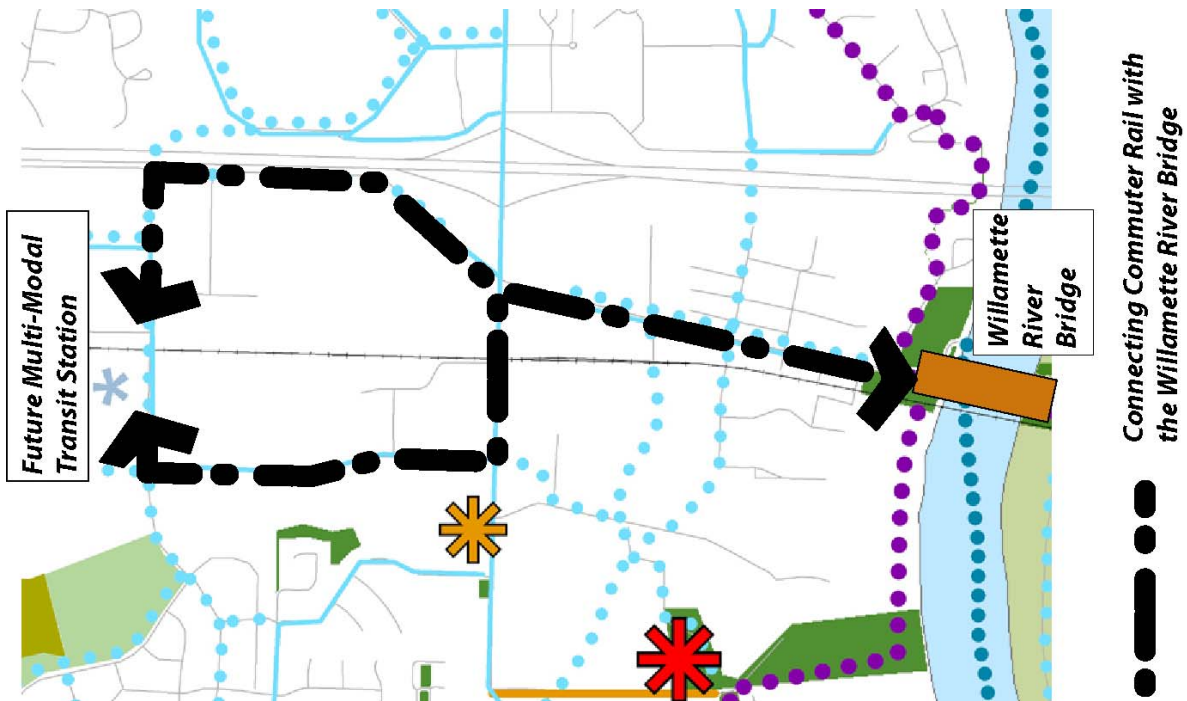
Priority Projects

Members of the ACMP, City staff, and the general public have identified the projects highlighted on the following pages as priority projects. These projects fill in a vital missing link within the existing bicycle and pedestrian network, enhancing opportunities for recreational use within the City while providing additional alternate transportation routes for commuters of all ages.

R5: Willamette River Crossing



- - - Potential locations for a separated bicycle/pedestrian bridge over the Willamette River
- - - Preferred location for a separated bicycle/pedestrian bridge over the Willamette River
- - - Potential shared-use paths
- Existing shared-use paths
- Existing on-street connection



2. Recommended Bicycle and Pedestrian Network

R5: Willamette River Crossing

Description

A separated bicycle and pedestrian bridge spanning the Willamette River would greatly improve the biking and walking experience of all users while serving as a gateway to Wilsonville and the Portland metro region for northbound travelers and the Willamette Valley for southbound travelers.

Currently, bicyclists and pedestrians are expected to use the freeway bridge deck when they wish to cross the Willamette River. For most users, this is a frightening experience at best. Instead of biking or walking, people choose to drive over the river and start bicycling from the south side.

The installation of a separated bridge also creates the opportunity to connect people with the river, while providing economic development opportunities for businesses in Old Town and other parts of Wilsonville. Furthermore, the bridge will strengthen regional connections by providing a linkage to the regional commuter rail station scheduled to begin operations in 2008.

The bridge would also emphasize Wilsonville's dedication as a bicycle and pedestrian friendly environment while creating stronger regional connections.

Type/Width

Shared-use bridge / 14 ft

Length

Approximately one mile

Ownership

City of Wilsonville

Key Land Uses/Destinations

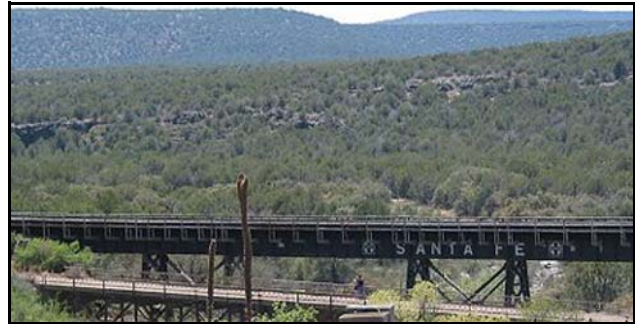
Serves residents and visitors of Wilsonville. Connects Wilsonville with Charbonneau, Champoeg, Willamette Valley Scenic Bikeway, and the southern Willamette Valley.

Issues

- | | |
|---|---|
| <ul style="list-style-type: none"> Identifying the appropriate bridge location and negotiating with property owners. Ensuring the privacy and safety of nearby residences and businesses. | <ul style="list-style-type: none"> Creating safe, comfortable access from both the north and south to ensure high usage of the bridge. |
|---|---|

Planning-Level Cost Estimate

\$7 - 12 million



Bicycle and pedestrian bridge near a rail bridge, Arizona

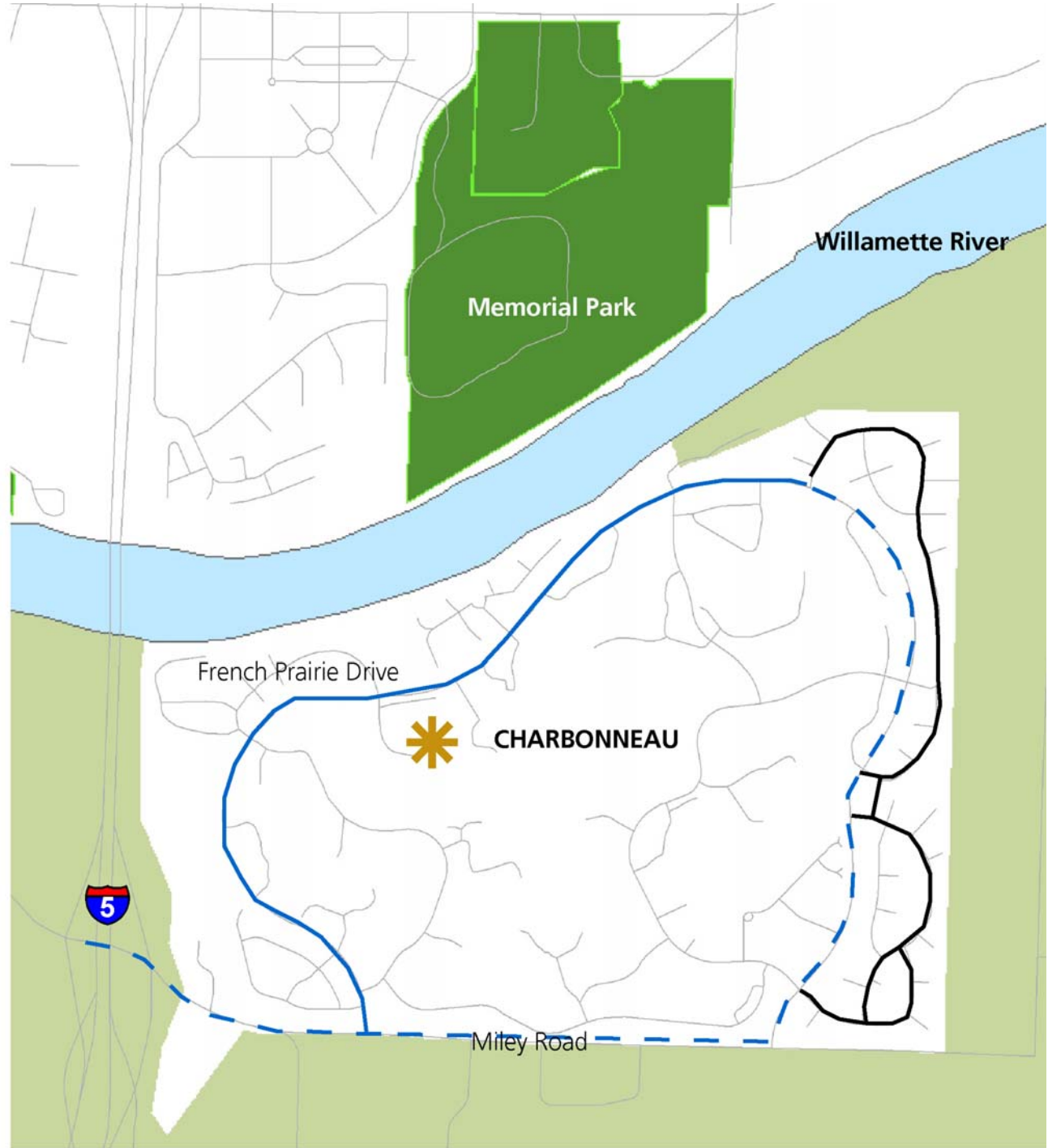


Sundial bridge in Redding, CA



Suspension bridge in Waco, TX

C13: Charbonneau Pedestrian Path



- Existing Path
- - - Proposed Path
- Existing Sidewalk
- ★ Charbonneau Village Center

2. Recommended Bicycle and Pedestrian Network

C13: Charbonneau Pedestrian Path

Description

The primary objective of this project is to improve the bicycling and pedestrian environment within Charbonneau.

Currently, the existing six-foot wide path ends at Country View Lane, transitioning to the existing sidewalk network on the roads east of French Prairie Drive. This existing path is a six-foot-wide asphalt path along the outside of the roadway, separated by a planting strip. The condition of the path varies from very good to substandard, mostly due to cracking and lifting of the path surface caused by tree roots. French Prairie Drive has a posted speed limit of 25 mph.

In a survey of Charbonneau residents, the majority of participants overwhelmingly supported the continuation of the path around the entire loop, so that people did not have to walk in the roadway. In addition to completing the loop, the project would focus on bringing the entire path up to ADA standards.

To accommodate bicyclists, the outside lane in either direction could be signed as a shared roadway, indicating to motorists to expect bicyclists. Another method of accommodating bicyclists is to reduce the number of travel lanes to one in either direction, and use the gained space to create curbside pathways for pedestrians and bicyclists. The paths could be raised and separated for protection from motor vehicle traffic.



Existing walking path



Potential location for path extension

Type/Width

Paved pedestrian path / 8 - 10 ft
Shared lane bicycle markings on roadway

Length

0.84 miles for missing piece, approximately 2.2 miles for the entire loop

Ownership

City of Wilsonville

Key Land Uses/Destinations

Serves residents and visitors to Charbonneau. Connects all neighborhoods with the golf course and village center. Connects residents with existing and proposed SMART stops.

Issues

- Some residents near missing gap concerned about more people traveling near their property.
- Ensuring appropriate design sensitivity to address privacy concerns of residents along French Prairie Drive.

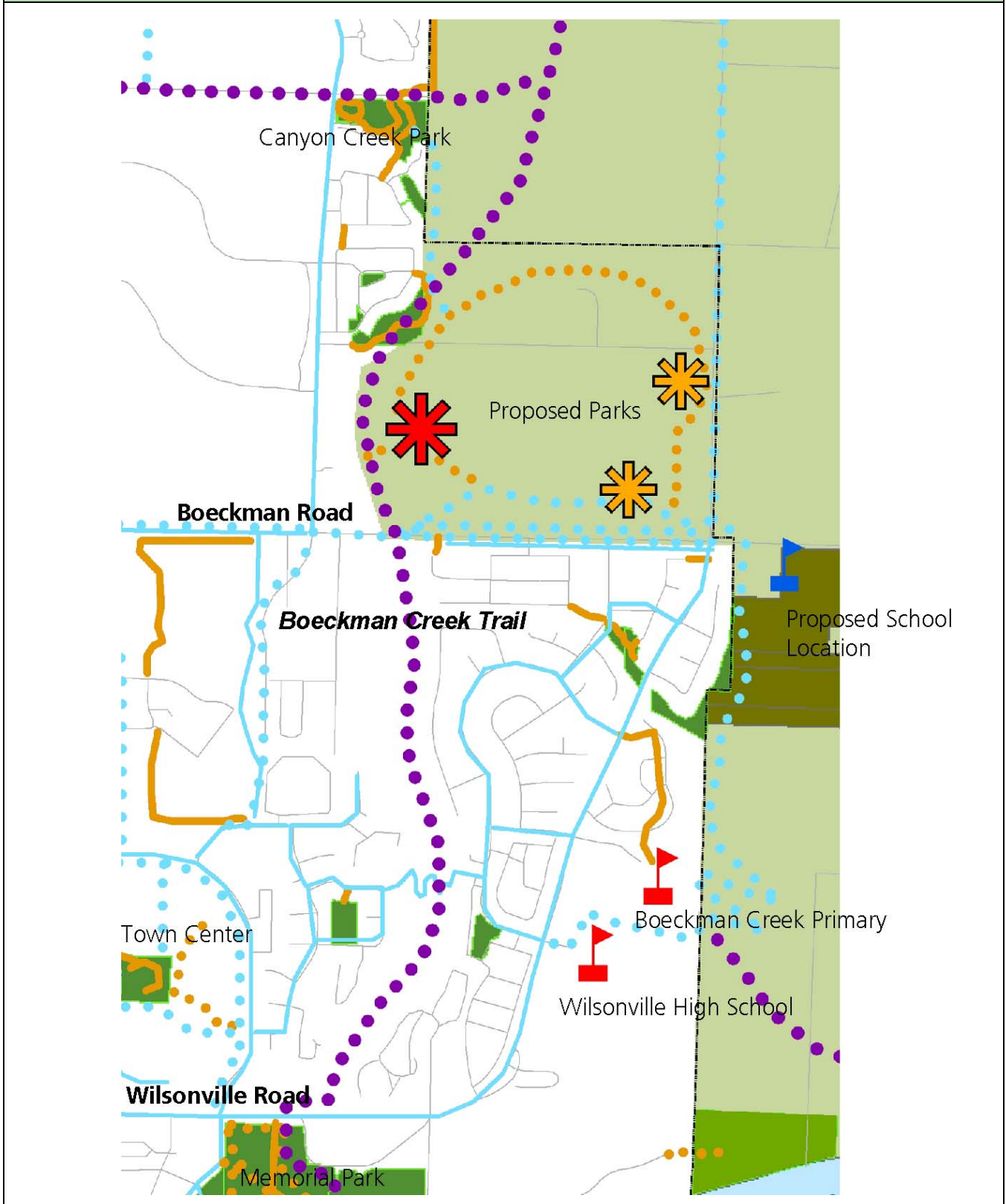
Planning-Level Cost Estimate

\$1,000,000 - \$1,110,000



The existing roadway with an 8-10-foot-wide path along the outside of French Prairie Drive.

R3: Boeckman Creek Trail



2. Recommended Bicycle and Pedestrian Network

R3: Boeckman Creek Trail

Description

The Boeckman Creek Trail is a critical piece of the potential regional trail loop around Wilsonville, linking to Memorial Park to the South, the Tonquin Trail to the West, and the Stafford Spur Trail to the East.

Establishing the Boeckman Creek Trail as a regional trail would increase its usage, provide a much needed north-south bikeway/walkway corridor and offer an amazing community amenity. This would entail adding a hard surface to facilitate non-motorized travel by wheeled vehicles such as wheelchairs, bicycles, inline skates, and skateboards.

There is an unpaved service road parallel to Boeckman Creek between Wilsonville Road and Boeckman Road. This connection is currently used as an "unofficial" recreation trail by bicyclists and pedestrians.

Surfacing options include permeable or non-permeable asphalt or concrete, sand seal, crushed granite or rock. Other amenities such as benches, art, and interpretive signs could be added.

Type/Width

Paved shared-use path / 10 - 12 ft

Length

2.4 miles from Memorial Park to Canyon Creek Park

Ownership

City of Wilsonville, Clackamas County, private property

Key Land Uses/Destinations

Serves residents throughout Wilsonville, particularly those living on the east side of the freeway. Provides connections to neighborhoods, planned development in the Frog Pond area, Memorial Park and the river, Wilsonville High School and Boeckman Creek Elementary School, Canyon Creek Park, Mentor Graphics and Xerox.

Issues

- Environmental constraints with regards to building close to the creek and within a sensitive habitat.
- Neighborhood concerns regarding safety and security due to greater access to the creek.
- Finding and creating multiple access points to the trail.
- Ensuring suitable connections to Wilsonville Road and Boeckman Creek Road.

Planning-Level Cost Estimate

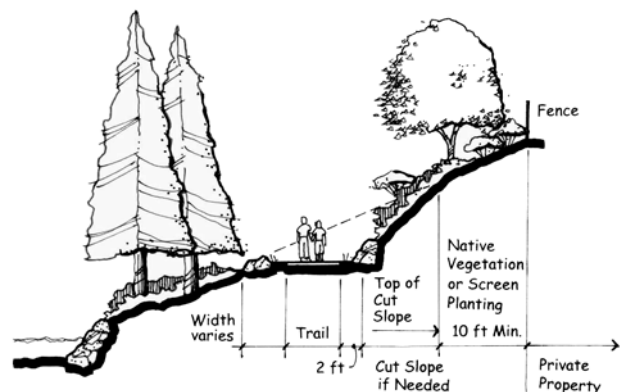
\$1.5 - 2.5 million



Existing condition along Boeckman Creek

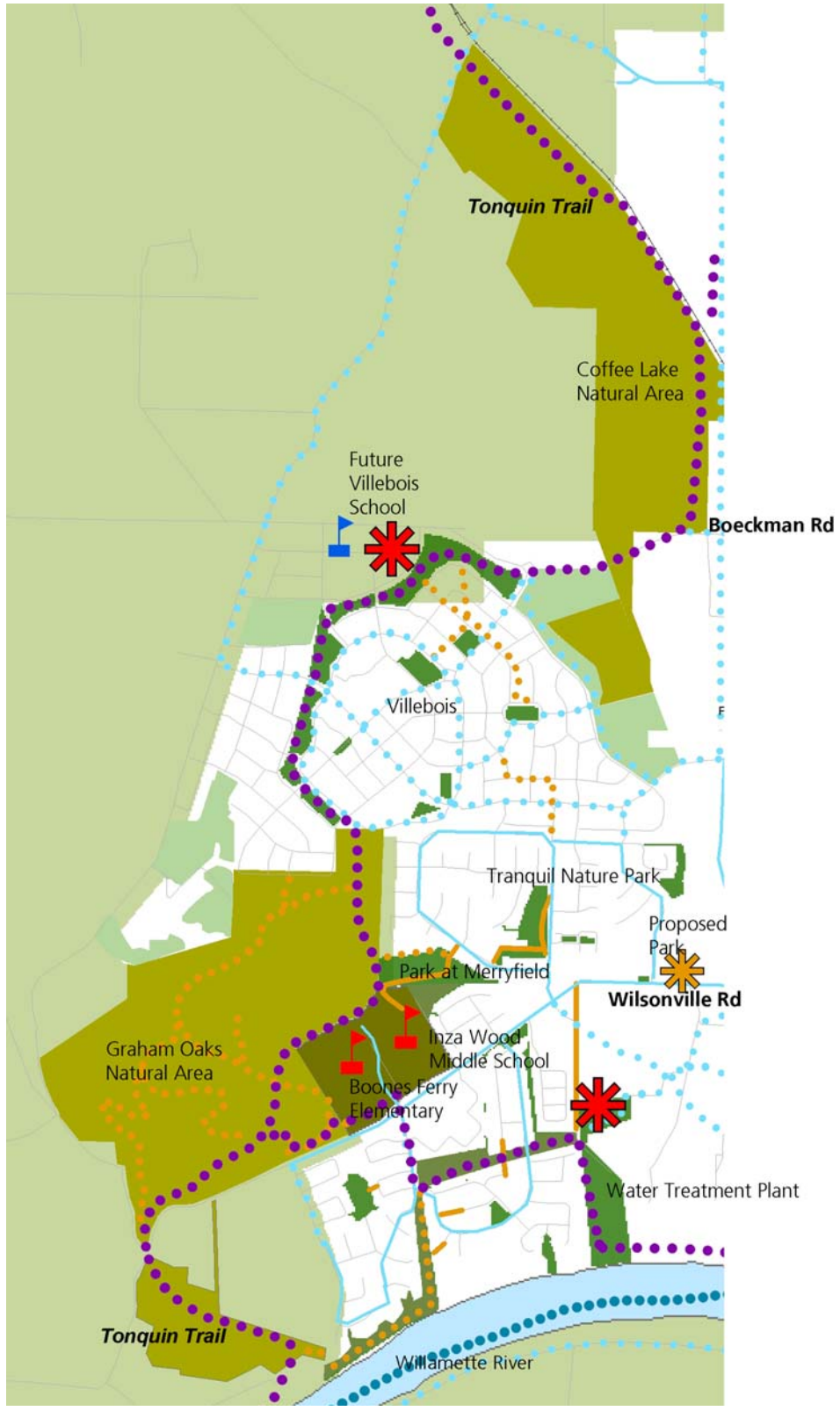


Existing bridge crossing Boeckman Creek


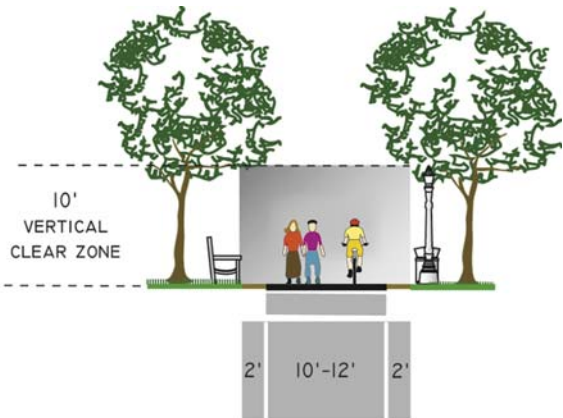


A shared-use path next to a creek

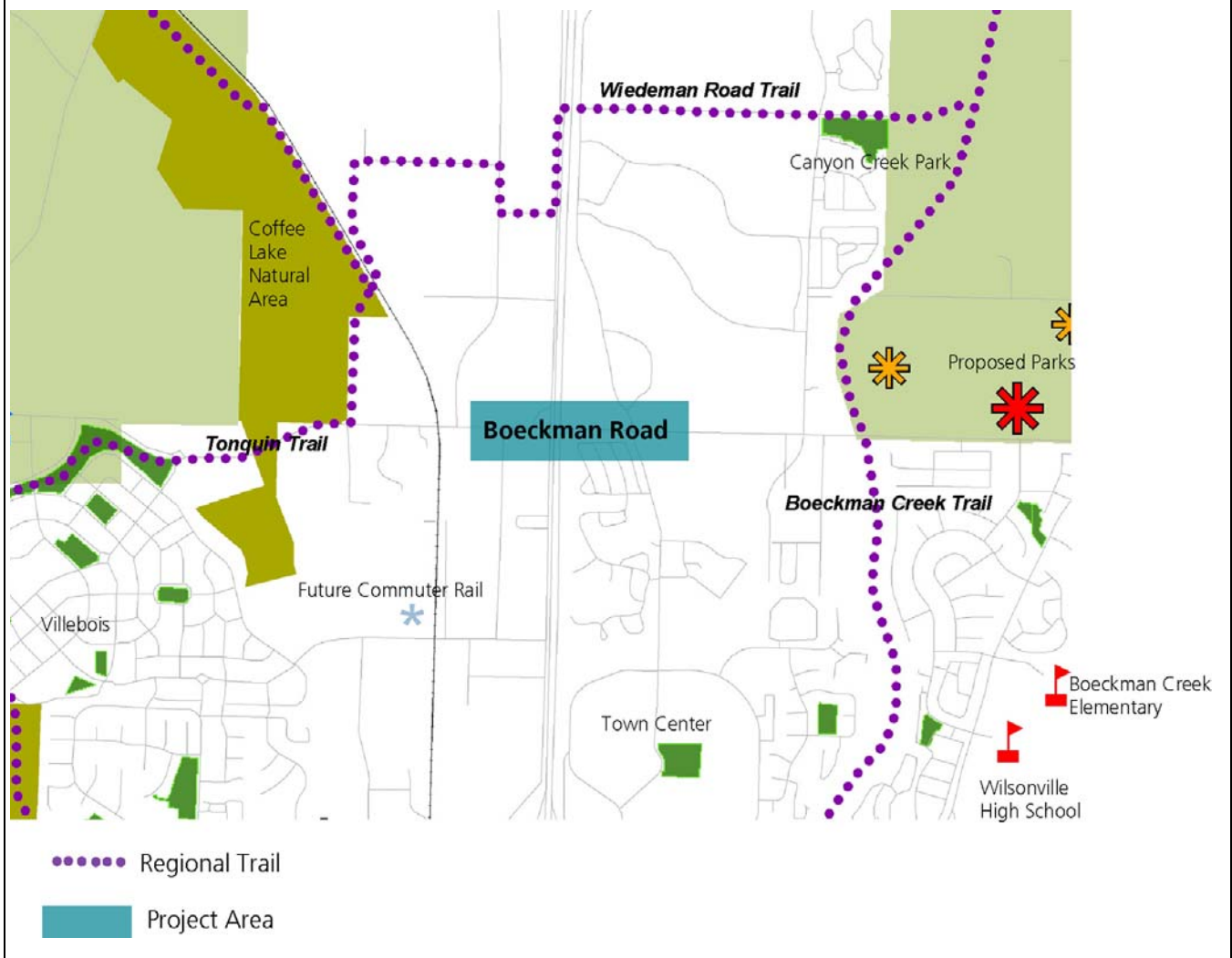
R1: Tonquin Trail



2. Recommended Bicycle and Pedestrian Network

R1: Tonquin Trail	
<p>Description</p> <p>The Tonquin Trail is identified on Metro's Regional Trail Plan as a significant regional, non-motorized trail linking the cities of Wilsonville, Tualatin and Sherwood. The trail, when built, will also serve to connect the Willamette and Tualatin Rivers, the existing Fanno Creek Greenway Trail, the future Willamette and Tualatin River Greenways, and the proposed Wiedeman Road Trail and Waterfront Trail. The trail will also connect users to the Tualatin River Natural Wildlife Refuge.</p> <p>When built, the Tonquin Trail will provide tremendous opportunities for transportation, recreation, and environmental education in this region. Along with numerous local and regional connections, the Tonquin Trail will also provide a number of wayside trail parks for the rest and enjoyment of all trail users.</p>	
 <p style="text-align: center;"><i>Coffee Creek wetlands</i></p>	
<p>Type/Width</p> <p>Paved shared-use path / 10 - 14 ft</p>	<p>Length</p> <p>Approximately 4 miles in Wilsonville, nearly 12 miles its entire length</p>
<p>Ownership</p> <p>Metro, City of Wilsonville, other</p>	
<p>Key Land Uses/Destinations</p> <p>The Tonquin Trail will serve Wilsonville residents and visitors alike by connecting: the rivers, parks, schools and neighborhoods from Wilsonville to Sherwood and Tualatin. In Wilsonville, the trail will connect Boones Ferry Park, the Water Treatment Plant Park, Boones Ferry Primary, Inza Wood Middle School, CREST, the Graham Oaks Natural Area, Villebois, Villebois school, and the CoffeeCreek wetlands.</p>	
<p>Issues</p> <ul style="list-style-type: none"> • Environmental mitigation and environmentally sensitive construction. • Maintaining access along the corridor for all users. • Maintaining privacy and security for residents along the proposed trail alignment. 	
<p>Planning-Level Cost Estimate</p> <p>\$1.2 - 2.9 million for the Wilsonville portion of the trail (including the sections of the trail that go through Villebois and Graham Oaks Natural Area). This is based on the Tonquin Trail Feasibility Study's recommended alignment, which followed an extensive multi-jurisdictional process.</p>	
 <p style="text-align: center;"><i>A standard regional trail cross-section</i></p>	
<p><i>The Tonquin Trail will travel along the Graham Oaks Natural Area, connecting users with the planned trail system there.</i></p>	

C6: Boeckman Road Overpass



2. Recommended Bicycle and Pedestrian Network

C6: Boeckman Road Overpass

Description

Bisected by I-5, residents of Wilsonville have few options for crossing the freeway - Elligsen Rd, Boeckman Rd, and Wilsonville Rd. These options all present challenges to the bicyclist and pedestrian, especially Elligsen and Wilsonville Roads, as they are freeway interchanges.

The lack of freeway access to and from Boeckman Road makes it ideal for an improved bicycle and pedestrian crossing. This is only enhanced by the road's central location and easy access to numerous destinations.

The bridge would be cantilevered off of one or both sides of the Boeckman Road overpass to provide easy east-west access. This section of Boeckman Road is in the TSP for a widening project, which would accommodate bike paths.

A short-term option includes widening the current approaches to the bridge and striping a bicycle/pedestrian path across the bridge. Additional precautions — such as slightly raising the path, sloping the path, or adding some type of barrier — could be explored.

Type/Width

Shared-use bridge / 6-12 ft

Length

Approximately half a mile

Ownership

City of Wilsonville, ODOT

Key Land Uses/Destinations

Serves residents throughout Wilsonville. Connects major employers such as Xerox and Mentor Graphics with neighborhoods (Villebois), the business parks and the future home of the commuter rail station. Provides residents of the west side improved access to Town Center and the high school.

Issues

- Load bearing capacity of the Boeckman Road overpass.
- Securing enough right-of-way to locate the bridge and the approaches.
- Coordination with ODOT would be required for this option.
- Providing safe and comfortable connections to the bicycle and pedestrian bridge on both sides of the freeway.
- Location of a future interchange at Boeckman Road and I-5.

Planning-Level Cost Estimate

\$2 - 4 million

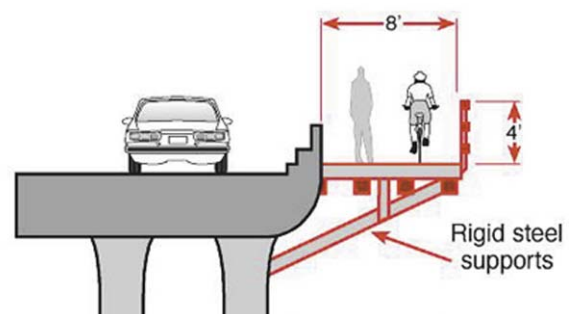


Boeckman Road looking west from Parkway Avenue



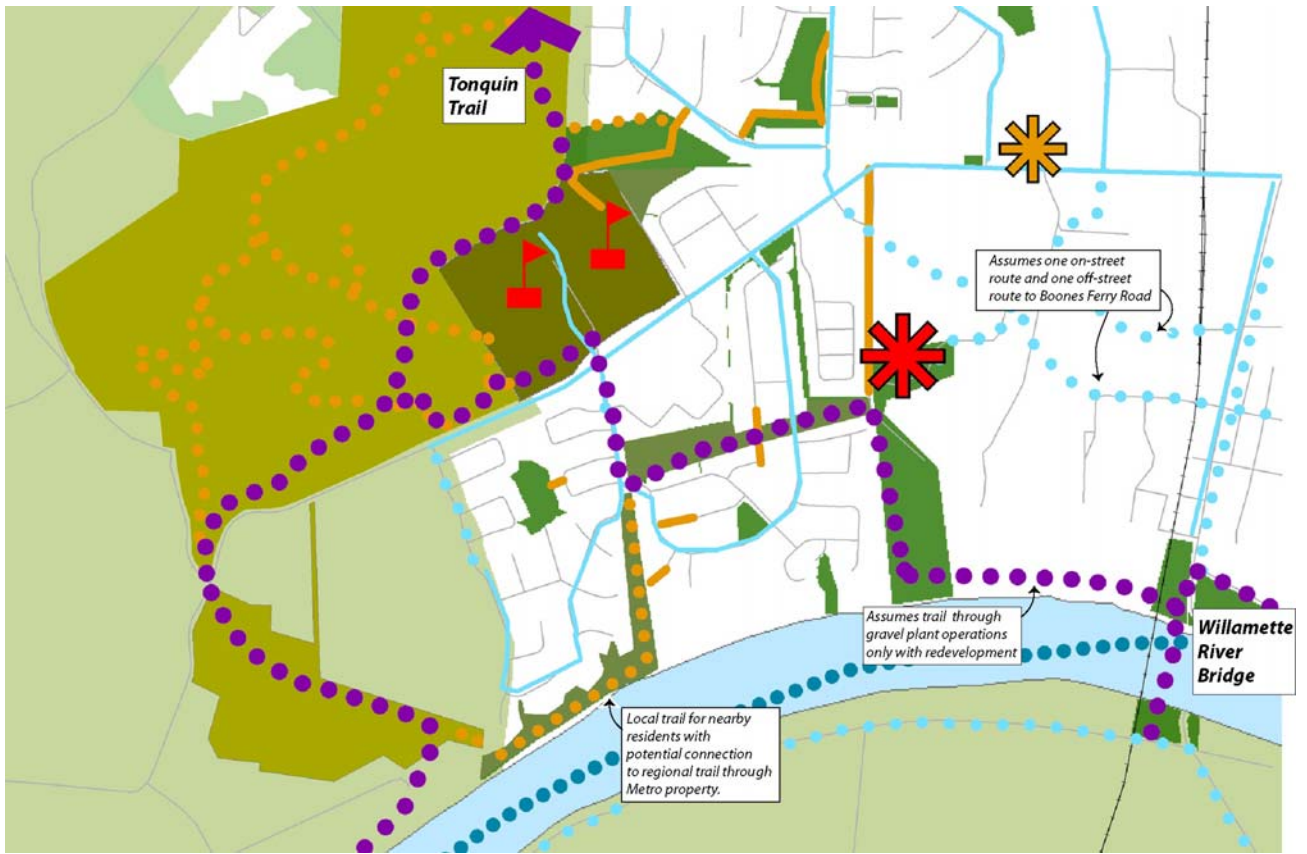
An overhead view of the Boeckman Road overpass

Cantilevered path addition



Cross-section of a cantilevered bridge

R4: Waterfront Trail - Rivergreen Alignment



2. Recommended Bicycle and Pedestrian Network

R4: Waterfront Trail – Rivergreen Alignment

Description

The Rivergreen neighborhood lies in a prominent position in the Wilsonville Bicycle and Pedestrian Plan, as it is located along the Willamette River, between the Tonquin Trail and the Willamette River Bridge. A number of alignments were examined, focusing on how each alignment met the goals of this Master Plan.

The recommended alignment for the regional trail is an on-street alignment that would connect through the school district property, head south along Willamette Way East, and connect with the Morey's Landing Trail.

The greenway along the river provides an opportunity for a local, natural trail. The BPA corridor is rather steep as it approaches the river, and will require some grading and switchbacks. Furthermore, the BPA corridor and greenway is owned by the HOA; thus, any trail there would require that the HOA and the BPA approve an easement. Together, the regional trail and local trail would provide an excellent set of trail loops for nearby residents.

It should be noted that this is a conceptual, planning-level alignment with a long-range vision for the eventual development of a complete bicycle, pedestrian, and trail system within Wilsonville. As the City begins to secure funding for the planning and design of this project, the City will work closely with adjacent homeowners to ensure privacy and security.

Type/Width

4-6 ft wide soft surface trail

Length

Approximately 0.5 miles

Ownership

City of Wilsonville, BPA, Rivergreen Homeowners Association

Key Land Uses/Destinations

Graham Oaks Natural Area, undeveloped Metro property south of Wilsonville Rd, regional Tonquin Trail, Boones Ferry Primary School, Wood Middle School, Rivergreen neighborhood, Water Treatment Plant Park, Willamette River bridge

Issues

- Negotiating with Rivergreen HOA for easement along the greenway and powerline corridor for local trail.
- Working with the neighborhood to ensure the privacy and safety of the nearby homes and property.
- Creating safe and comfortable access for all trail users while addressing ADA issues.
- Environmental permitting.
- Working with the school district to locate a regional trail near the CREST campus.

Planning-Level Cost Estimate

\$300,000 – \$500,000



The slope of the Rivergreen HOA open space leading from the Willamette River up to the BPA powerline corridor will require grading and switchbacks for a local, natural trail.

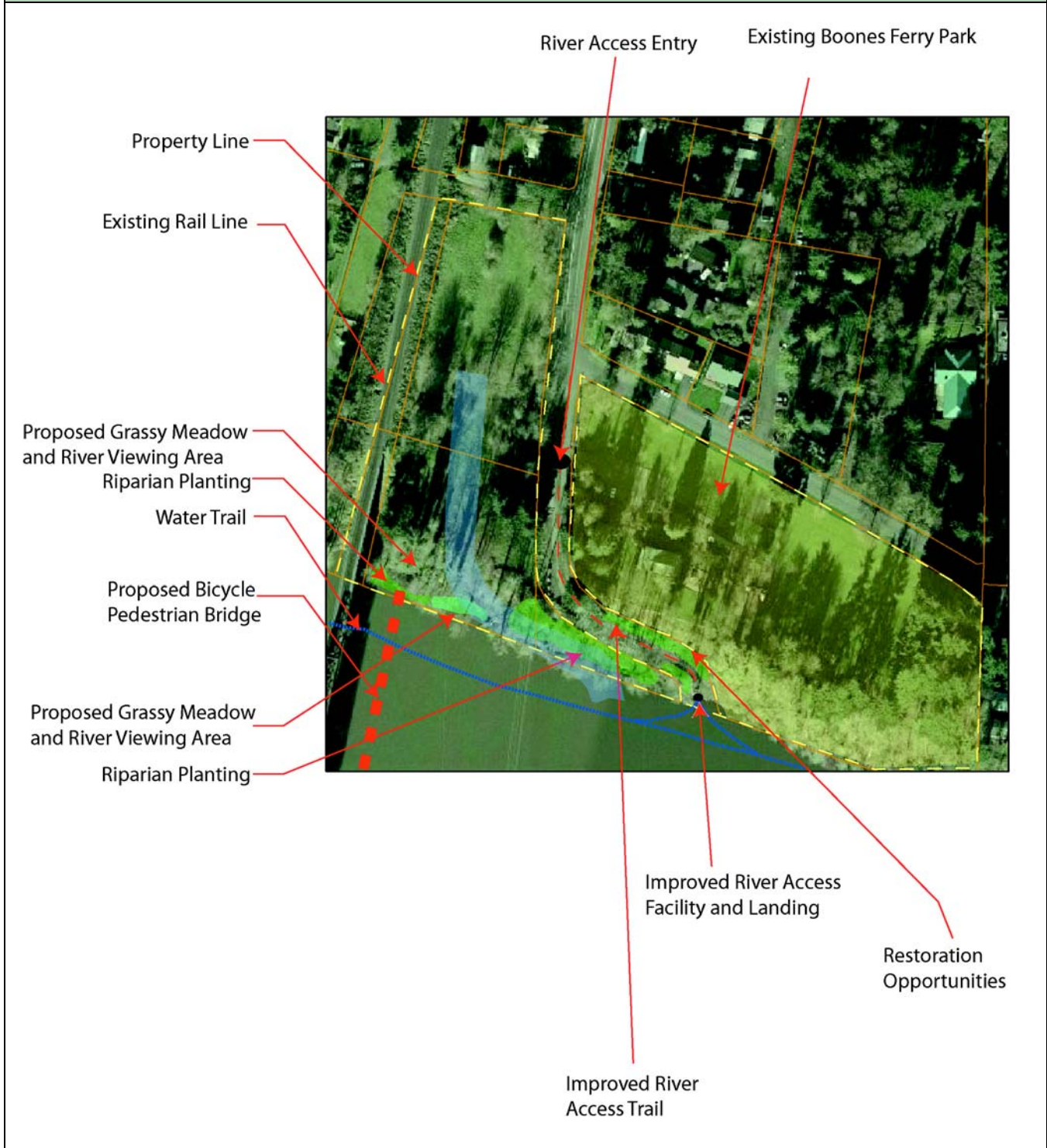


A connection to the regional trail system should occur through the school district property.



The existing Morey's Landing path that would become part of the regional trail network within Wilsonville.

WT1: Boones Ferry Landing



2. Recommended Bicycle and Pedestrian Network

WT1: Boones Ferry Landing

Description

The Boones Ferry entry site is representative of the historic ferry terminal operated by the Boone family. A steep paved access road leads to the rivers edge where the concrete foundation of the historic ferry landing can be viewed. The site is tied to a formal park while the current path leading to the river is paved most of the way and does not meet ADA access standards.

Opportunities exist to develop facilities that foster safe entry to the river for non-motorized watercraft. While formalizing a connection to the river there is an opportunity to develop a park and river access facility that celebrates the historic uses of the river. The site offers opportunities to develop a possible storage facility. The site also provides excellent economic development opportunities for the Old Town along Boones Ferry Road as a tourist and traveler destination spot.

Put-in/Take-out

Length from Parking

Both

Approximately 500 feet

Ownership

City of Wilsonville

Key Land Uses/Destinations/Facilities

Businesses and residents in Old Town, Tauchman House and key regional bike paths. Play, sports and picnic facilities at Boones Ferry Park.

Issues

- Steep pathway down to river
- Improve river access
- Path surface is uneven and needs to be formally developed

Planning-Level Cost Estimate

\$100,000 - \$300,000



Existing slope looking up toward the top of the river bank from the historic Boones Ferry Landing

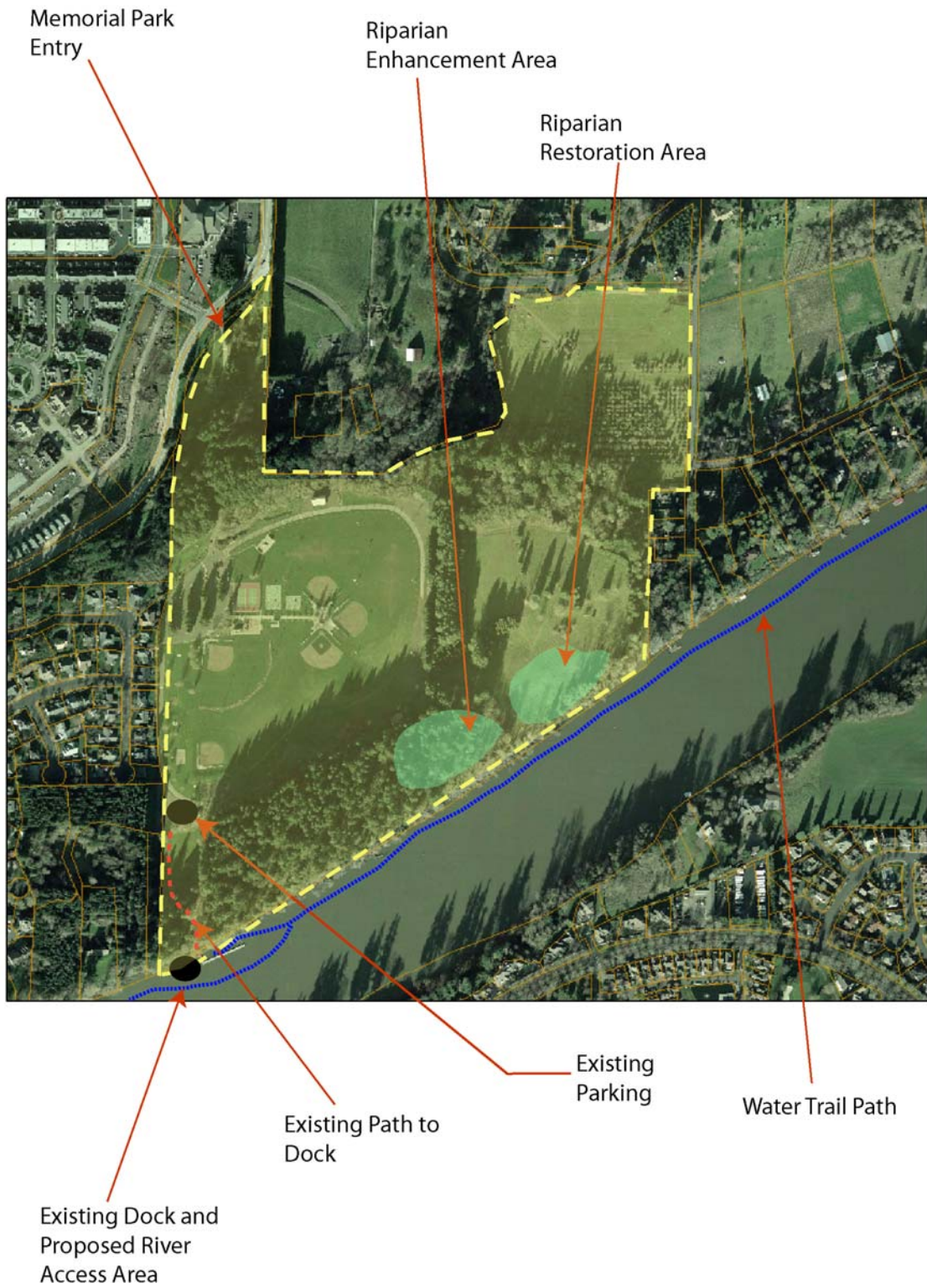


Proposed hard surface trail and hand rail treatment to improve access



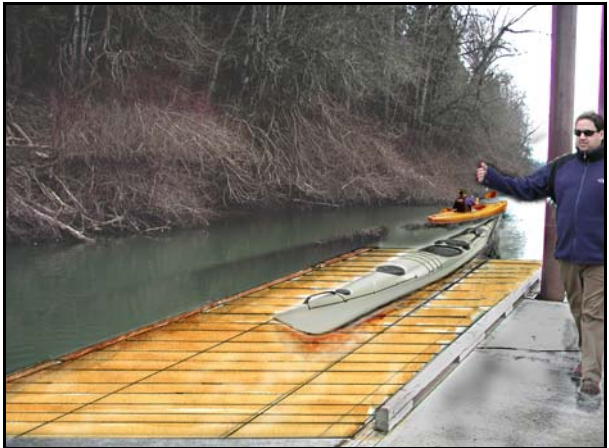


A rendering of a formal entrance to the Boones Ferry Landing

WT2: Memorial Park



2. Recommended Bicycle and Pedestrian Network

WT2: Memorial Park	
<p>Description</p> <p>Memorial Park currently serves as a primary recreation and natural area resource for Wilsonville residents and visitors alike by connecting the river, parks, schools and neighborhoods from Wilsonville to the Willamette River. The site offers interpretive riparian restoration opportunities along with connections to existing dock facilities. This site offers safe access and entry to the Willamette, as well as the opportunity to locate boat storage facilities adjacent to the parking area overlooking the sheltered picnic facility.</p> <p>This site is a primary water trail access and take out location. Parking is a benefit to users that are participating in multi-day river excursions, and there is space to stage equipment. Handcarts could be provided to assist in the hauling of the boats and equipment to the river.</p>	
<p>Put-in/Take-out</p> <p>Both</p>	<p>Length from Parking</p> <p>Approximately 1000 feet from the parking area to the dock ramp</p>
<p>Ownership</p> <p>City of Wilsonville</p>	
<p>Key Land Uses/Destinations/Facilities</p> <ul style="list-style-type: none"> • General park facilities ball fields, play grounds, picnic shelter • Parking • Dock facilities • Restrooms • Riparian restoration and enhancement area 	
<p>Issues</p> <ul style="list-style-type: none"> • Site does not meet ADA standards • Dock facility does not support non-motorized water craft • Path surface is uneven and needs to be developed 	
<p>Planning-Level Cost Estimate</p> <p>\$75,000 - 375,000 (The lower costs are for improvement of the trail and approach only. The higher costs would be for addition of a retrofit dock to support non-motorized water craft and a new gangway facility that supports ADA access to the dock.)</p>	
 <p style="text-align: center;"><i>Existing Memorial Park dock</i></p>  <p style="text-align: center;"><i>Existing dock entry at Memorial Park</i></p>  <p style="text-align: center;"><i>A rendering of a non-motorized dock attached to the existing dock</i></p>	



3. Plan Implementation and Phasing

Selection Criteria and Project Priorities

Estimated Long-Term Costs

Public Funding Sources for Bicycle, Pedestrian, and Trail Projects

Maintenance Guidelines and Costs

3. Plan Implementation and Phasing

Selection Criteria and Project Priorities

Working with consultants, city staff, and the ACMP, evaluation criteria for the bicycle and pedestrian plan was developed. The evaluation criteria was applied in three different ways:

- The criteria were applied in laying out the future bicycle and pedestrian network by identifying the features of a network that are most important to the residents of Wilsonville.
- The criteria were applied to individual project alternatives to select a preferred alternative.
- The criteria were used to rank projects against each other as an indication of their relative importance.

The goal was to develop three tiers of project priorities so that the City may focus funding and funding applications on the highest priority projects. As there are three different categories of facilities set forth in the Plan, each category was evaluated independently. The criteria used in the rankings include (100 total points possible):

Connectivity (25 points): To what degree does this alternative fill in a missing gap in the bicycle and pedestrian system?

User Generator (25 points): To what degree will the alternative likely generate significant transportation or recreational usage based on population, corridor aesthetics, etc?

Land Uses (15 points): How many user generators does the alternative connect to within one-fourth to one-half mile of the project, such as schools, parks, transit centers, employment and commercial districts, churches, etc?

Overcomes Barrier (15 points): How well does the alternative overcome a barrier in the current bicycle and pedestrian network?

Regional Benefits (10 points): To what degree does the alternative offer potential benefits to the wider,

regional community by creating opportunities for increased connectivity, parks, view points, etc?

Ease of Implementation (10 points): How difficult will it be to implement this project? This criterion takes into account topographical, environmental, political, and economic constraints, which should be considered only after the idea has been evaluated on merit.

Using the above criteria, the consultant team ranked individual projects based on information obtained from site visits, field work, City staff, and from the public. As a result, the projects have been grouped by classification into Tier 1, Tier 2, and Tier 3 project priorities.

The short-, mid-, and long-term schedule may change according to available funds, changing priorities, new roadway projects that coincide, new development and redevelopment opportunities, or other factors.

It should be noted that the purpose of this exercise is to understand the relative priority of the projects so that the City may apportion available funding to the highest priority projects. Medium and long-term projects also are important, and may be implemented at any point in time as part of a development or public works project. The ranked lists should be considered a "living document" and should be frequently reviewed to ensure they reflect current Wilsonville priorities.

Table 2. Regional Trail Priorities

Tier 1	Tier 2	Tier 3
R1: Tonquin Trail	R4: Waterfront Trail	R2: Stafford Spur Trail
R3: Boeckman Creek Trail	R4a: Memorial Park to Boones Ferry Park Trail improvements	R6: Wiedeman Road Trail - Phase 3
R5: Willamette River Bridge	R6b: Wiedeman Road Trail - Phase 2	
R6a: Wiedeman Road Trail - Phase 1		

Table 3. Community Pathways and Bikeways Priorities

Tier 1	Tier 2	Tier 3
C1: Town Center Improvement Package	C3: Town Center Park Trail	C15: Memorial Drive/5th Street overpass
C2: West Town Center Loop	C4: Town Center Loop Bridge	C16: 5th Street
C6: Boeckman Road Bridge	C5: Parkway Avenue	C18: Railroad Tracks crossing
C7: Boeckman Road	C10: Frog Pond	C23: Barber Street/Boones Ferry Road
C8: Canyon Creek extension	C11: School Trail	C34: Clutter Road
C9: Boeckman Road	C12: Memorial Park Central Loop Trail	C35: Cahalin Road (new road)
C13: French Prairie Drive	C19: Brown Road	C38: Commerce Circle
C14: Miley Road	C20: 5th Street extension	C39: Elligsen Road
C21: Water Treatment Plant connection	C26: Kinsman Road extension	C42: Canyon Creek Trail
C22: Willamette Way East sidewalks	C27: Barber Street	
C24: Boberg Road	C28: Villebois Open Space	
C25: Barber Street	C29: Villebois Loop	
C32: Boeckman Road extension	C30: Villebois Drive	
C33: 95th Avenue	C31: Grahams Ferry Road	
C40: Parkway Avenue	C36: BPA Powerline Trail	
	C37: Area 42 Trail	
	C41: Parkway Center Connector	

Table 4. Local Trail Priorities

Tier 1	Tier 2	Tier 3
L1: Center Loop Trail	L5: River Trail	L8: Park Access Trail
L2: Triangle Forest Trail	L6: Kolbe Homestead Trail	L12: Villebois Loop Trail
L3: Indian Plum Creek Trail	L7: Klein Homestead Trail	L13: School Trail
L4: Lone Oak Trail	L9: Town Center Loop	L15: Rivergreen
L10: Park at Merryfield Trail	L11: Tonquin Connector	
	L13: Frog Pond Loop	

Estimated Long-Term Costs

The candidate projects are recommended to be implemented over the next 25+ years, or as funding is available. Some of the more expensive projects may take longer to implement.

The total implementation cost is estimated at approximately \$60 million. Approximately \$24 million is for regional trails, \$34 million for pathways and bikeways, and \$2 million for local trails. A complete breakdown of costs is included in Appendix A. Again, many trails will likely be implemented as part of property development projects over time. It is important to note that while some of the trail projects can be funded with Federal, State, and regional transportation, safety, and/or air quality grants, many are recreational in nature and must be funded by local or private sources.

Table 5. Tier 1 Projects with Planning Level Costs

ID	Project	Cost
R1	Tonquin Trail	\$2,900,000
R3	Boeckman Creek Trail	\$1,900,000
R5	Willamette River Bridge	\$10,000,000
R6a	Wiedeman Road Trail - Phase 1	\$330,000
C1	Town Center Improvement Package	\$90,000
C2	West Town Center Loop	\$345,000
C6	Boeckman Road Bridge	\$3,875,000
C7	Boeckman Road	\$490,000
C8	Canyon Creek extension	\$445,000

ID	Project	Cost
C9	Boeckman Road	\$875,000
C13	French Prairie Drive	\$1,110,000
C14	Miley Road	\$950,000
C21	Water Treatment Plant connection	\$235,000
C22	Willamette Way East sidewalks	\$30,000
C24	Boberg Road	\$360,000
C25	Barber Street	\$430,000
C32	Boeckman Road extension	\$215,000
C33	95th Avenue	\$80,000
C40	Parkway Avenue	\$515,000
L1	Center Loop Trail	\$410,000
L2	Triangle Forest Trail	\$200,000
L3	Indian Plum Creek Trail	\$190,000
L4	Lone Oak Trail	\$20,000
L10	Park at Merryfield Trail	\$46,500
	TOTAL	\$26,041,500

Facility Funding Sources

Historical Funding

The City of Wilsonville spends hundreds of thousands of dollars each year on transportation infrastructure, with all new roadway projects including bicycle and pedestrian facilities (bike lanes and sidewalks). For example, the phased improvement of Wilsonville Road from the western city boundary to Boeckman Road now provides a complete east-west bicycle and pedestrian connection. This figure does not include other monies and projects supported by the state, county, and private developers. Thus, projects such as the trails and greenways in Villebois are funded primarily by private developers while improving bicycle and pedestrian conditions within the City of Wilsonville. In addition, the City has recently dedicated money to the Boeckman Creek Crossing, the Memorial Park Trail, and the Boones Ferry Park/Memorial Park Connector Trail. In total, the City and others have spent millions of dollars on transportation infrastructure improvements that have directly benefited bicyclists and pedestrians.

The Tier 1 projects are a combination of major bridge investments (Willamette River Bridge, Boeckman Road Bridge) that will require coordination and funding from federal, state, regional, and local sources; regional trails that will require coordination between Metro, counties, and the effected cities; bike lanes and sidewalks that will be constructed as the adjacent roadways are improved or constructed using traditional funding methods; and community and local trails that will be funded primarily by the City of Wilsonville through a variety of methods. Funding opportunities are discussed further below.

Public Funding for Bicycle and Pedestrian Facilities

There are a variety of potential funding sources including local, state, regional, and federal funding programs that can be used to construct or augment the proposed bicycle and pedestrian improvements. Most of these are competitive, and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Local funding for these projects would typically come from Wilsonville and/or potential future bonds or other local revenues.

Table 6 on page 51 summarizes public funding sources for Wilsonville trails, bicycle, and pedestrian projects. Some of these funds are restricted to the type of improvements that qualify for assistance. It is important to note that many of the funding sources are highly competitive and impossible to determine exactly which projects will be funded by which funding sources. It is also difficult to pinpoint the timing of the projects, due to dependence on competitive funding sources, timing of roadway and development projects, and the overall economy.

Developer Contributions

Developers continue to play an important role in the development of the bicycle and pedestrian network and park system within the City of Wilsonville. The Villebois development has contributed a number of parks and open spaces connected by trails, as well as a comprehensive sidewalk network and bike lanes where appropriate to encourage non-motorized travel and provide additional recreational opportunities to the surrounding residents. The Canyon Creek development has also provided additional bicycle and pedestrian facilities for connecting to Town Center Loop.

Other Funding Opportunities

Residents and other community members are excellent resources for garnering support and enthusiasm for a bicycle and pedestrian facility and the City should work with volunteers to substantially reduce implementation and maintenance costs. Local schools, community groups, or a group of dedicated neighbors may use the project as a project for the year, possibly working with a local designer or engineer. Work parties can be formed to help clear the right-of-way where needed. A local construction company can donate or discount services. Other opportunities for implementation will appear over time, such as grants and private funds. The City should look to its residents for additional funding ideas to expedite the completion of the bicycle and pedestrian system.

Table 6. Public Funding Sources for Bicycle, Pedestrian, and Trail Projects

Source	Description	Eligible Projects	Funding Cycle
Metro Transportation Improvement Program Funding (MTIP)	Federal transportation funds coordinated by Metro. Funds can be used for Preliminary Engineering, ROW acquisition and construction.	Regional, community trail projects along roadways with regional classifications	2 years
Recreational Trails Grants	Coordinated by Oregon State Parks. Funds can be used for ROW acquisition and construction.	Regional, local trails	Annual
Land and Water Conservation Fund (LWCF)	Federal funds coordinated by Oregon State Parks. Funds can be used for ROW acquisition and construction.	Regional, local trails	Annual
Measure 66 funds from Oregon State Lottery	Coordinated by Oregon State Parks. Funds can be used for ROW acquisition and construction.	Regional, local trails	2 years
Transportation Enhancements	Administered by Oregon Department of Transportation (ODOT). Must serve transportation need.	Regional, community, some local trails	2 years
Oregon Bike/Ped Grants	Administered by ODOT's Bicycle and Pedestrian Program. Must be in public ROW.	Regional, community, some local trails	2 years
System Development Charges (SDCs)	Fees on new construction allocated for parks, streets, and public improvements. Expand Wilsonville Parks' SDC program to include trail projects.	Community, local trails	Varies
Local/Regional bond measures	Funds can be used for ROW acquisition, engineering, design and trail construction.	Regional, community, local Trails	Varies
Tax Increment Financing/ Urban Renewal Funds	Part of trail project must be located in an urban renewal district which meets certain economic criteria and is approved by a local governing body.	Community, local trails	Varies
Local Traffic Safety Commission	Funding for street crossings and signals.	Community, local trails	Varies
Safe Routes to School Funds	Federal funds for pedestrian and bicycle facilities to improve school safety	Regional, community, local trails	Pending legislation
Congestion Mitigation and Air Quality (CMAQ) funds	Federal funding for bicycle and pedestrian facilities that reduce travel by automobile. Recreational facilities generally are not funded.	Community trails	2 years
Local Improvement District (LID)	For proposed trail alignments that fall across private property, the City should consider purchasing the properties, if they are for sale, and acquiring a trail easement before reselling the property.	Regional, Community, Local trails	Varies

Maintenance Guidelines and Costs

The following table summarizes a recommended maintenance schedule for the Wilsonville bicycle and pedestrian system. These guidelines address maintenance on the off-street portions of the system. On-street portions should be maintained per the standards of the city.

Table 7. Maintenance Guidelines

Item	Frequency
Inspections	Seasonal - at both beginning and end of summer
Signage replacement	1-3 years
Pavement markings replacement	1-3 years
Major damage response (fallen trees, washouts, flooding)	Repair as soon as possible
Pavement sealing, potholes	5-15 years
Tree and shrub plantings, trimming	Every 1-3 years
Culvert inspection	Before winter and after major storms
Cleaning ditches	As needed
Trash disposal	Weekly during high use; twice monthly during low use
Trash cans frequency	Located at all trailheads and junctures, and as appropriate based on trail usage.
Lighting luminaire repair	Repair as soon as possible; monitor on a regular basis
Pavement sweeping/blowing	As needed, before high use season. Weekly in fall.
Maintaining culvert inlets	Inspect before the onset of the wet season, then again in early fall.
Shoulder plant trimming (weeds, trees, brambles)	Twice a year: middle of growing season and early fall
Waterbar maintenance (earthen trails)	Annually
Site furnishings, replace damaged components	As needed
Graffiti removal	Weekly, as needed
Fencing repair	Inspect regularly for holes and damage, repair immediately
Shrub/tree irrigation for introduced planting areas	Periodically during summer months until plants are established
Litter pick-up	Weekly for high use; twice a month for low use
Drinking fountain and restroom maintenance	As needed
Biobag placement/inspection	Before winter and after major storms

Table 8. Total Annual Maintenance Costs

Facility Type	Miles*	Cost/Mile	Total
Regional Trails	15	\$6,000**	\$90,000
Community Trails	16	assumed as part of roadway maintenance	
Local Trails			
Natural Trails	4.5	\$800	\$3,600
City Trails	4	\$3,000	\$12,000
Sidewalks/ Accessway	n/a	assumed as part of roadway maintenance	
<p>* Approximate estimation. Actual trail miles will be determined after a detailed planning process and an engineering/survey analysis.</p> <p>** Lower bound cost estimate based on Portland's Springwater Corridor Trail. Maintenance costs typically range from \$6,000 - \$10,000 per year. On-street portions of the Regional Trail will undergo routine street maintenance.</p>			



4. Recommended Bicycle and Pedestrian Programs

Introduction

Safe Routes to School

Bicycle Parking

City Programs

Becoming a Bicycle Friendly Community

4. Recommended Bicycle and Pedestrian Programs

Introduction

Bicycle and pedestrian programs enhance the biking and walking experience in ways other than the provision of on- or off-road pathways and bikeways. Support programs include educational programs, the provision of bicycle parking, and various city programs and policies. The Manual on Uniform Traffic Control Devices (MUTCD) provides support and guidance regarding the need for standards in establishing safe routes to schools. The process outlined in the MUTCD should be consulted in the development of any Safe Routes to School program.

Safe Routes to School

Safe Routes to School (SR2S) refers to a variety of multi-disciplinary programs aimed at promoting walking and



bicycling to school, and improving traffic safety around school areas through education, incentives, increased law enforcement, and engineering measures. Safe Routes to School programs typically involve partnerships among municipalities, school districts, community and parent volunteers, and law enforcement agencies. City staff and consultants met with Wilsonville school district senior officials principals, as well as children from Boeckman Creek Primary School and Wood Middle School, to discuss a potential SR2S program. These community representatives support the inclusion of the SR2S program as a vital component of the Wilsonville Bicycle and Pedestrian Master Plan.

The City has a vested interest in encouraging school children to lead active lifestyles. Safe Routes to School programs offer ancillary benefits to neighborhoods by helping to slow traffic and provide reasonable facilities for walking by all age groups.

Why Do We Need SR2S?

The purpose of a SR2S program is to identify and improve school commute routes, to increase the number of students who walk and/or bicycle to school in Wilsonville, to lessen traffic congestion, and to improve health. Although most children walked or biked to school pre-1980's, the number of children walking or bicycling to school has sharply declined since, due to urban growth patterns and safety/security issues which have made it less safe to do so. Higher obesity rates are being reported and linked to many of these lifestyle changes. Walking and biking to school are healthy alternatives to being driven, and can provide a sense of independence for children who may otherwise be restricted by school bus or parents' schedules.

What Are the Benefits of a SR2S Program?

The primary benefit of implementing a SR2S program is the resulting increase in safety for children walking and riding bicycles to school. A



comprehensive strategy based on a cooperative effort between school officials, parents, residents and city planning and engineering staff will ensure that specific school-related traffic calming projects and pedestrian and bicycle improvements will become priority projects eligible for state, federal, or other grant funding. The involvement of various stakeholders throughout the Safe Routes process increases the likelihood for implementation of needed safety improvements. While the primary focus of a SR2S program is improving safety for children walking and biking to school, these safety benefits often extend to all age and activity groups.

In addition to safety enhancements, a SR2S program helps integrate physical activity into the everyday routine of school children. Health concerns related to sedentary lifestyles have become the focus of efforts both statewide and nationally to reduce health risks associated with being overweight. Identifying and improving routes for children to safely walk and bicycle to school is one of the most cost-effective means of reducing weekday morning traffic congestion and can help reduce auto-related pollution.

Local Coordination and Involvement

In order to be successful, a SR2S program in Wilsonville will need buy-in from individuals and organizations throughout the community. While each individual school will have unique concerns and goals for developing a SR2S program, an organizational strategy that promotes the sharing of ideas between schools can be more effective than several isolated school groups. The key components of an effective SR2S program include champions (individuals at each school who spearhead their school's organizing effort), stakeholders (a team of people from an individual school), and a task force made up of all the stakeholder teams in the community.

The basic components of the proposed SR2S program include:

Education

Students are taught safety skills, and educational campaigns aimed at drivers are developed. Safe Routes to School maps help provide guidance for the best bicycling and walking routes. SR2S maps for the four schools in Wilsonville are shown in Map 2 on page 60-Map 5 on page 63.

Curriculum programs implemented in schools can teach children the basics regarding pedestrian and bicycle safety. Classroom educational materials should be presented in a variety of formats (safety videos, printed materials, and classroom activities), and should continually be updated to make



use of the most recent educational tools available. Classroom education programs should also be expanded to promote the health and environmental benefits of bicycling and walking. Outside schools, educational materials should be developed for different audiences, including elected officials (describing the benefits of and need for a SR2S program), and parents (proper school drop-off procedures and safety for their children).

Educational programs should be linked with events and incentive programs when appropriate, and students should be included in task force activities, such as



mapping locations for improvements. Involving students can serve as an educational tool and can also provide the task force with meaningful data that is useful for prioritizing improvement locations. Educational programs, and especially on-bike training, should be expanded to more schools and for more hours per year.

Encouragement

School commute events and frequent commuter contests are used to encourage participation.

Programs that may be implemented include a "Walking School Bus Program," which involves parents taking turns walking (or bicycling) with groups of children to school. A good opportunity to kick-off a SR2S program is during International Walk to School Day, held annually in early October. Good resources and start-up material can be found at the City of Portland's new Safe Routes to School website, <http://www.trans.ci.portland.or.us/saferoutes/program/>. Organized Bike and Walk to School Days should be held monthly or weekly to keep the momentum going and encourage more children and their parents to walk or bike to school. Prizes or drawings for prizes offered to participants have been used in some schools as an incentive. Events related to bicycling and walking should be incorporated into existing curricula when practical. Involving local celebrities or publishing the names of student participants in events

4. Recommended Bicycle and Pedestrian Programs

can be effective means of encouraging student involvement. Another key to successful events is promotion. Ensuring that parents are aware of events, whether classroom-specific or district-wide, is key to gaining maximum student participation.

Other contests and event ideas to encourage bicycling and walking to school include: competitions in which classrooms compete for the highest proportion of students walking or biking to school, themed or seasonal events, and keeping classroom logs of the number of miles biked and walked by children and plotting these distances on a map of Oregon or the US. A wealth of information and ideas for promoting SR2S programs can be found at: www.nhtsa.dot.gov/people/injury/pedbimot/ped/saferouteshtml/index.html.

Enforcement

Various techniques are employed to ensure traffic laws are obeyed. The Wilsonville Police Department patrols school zones and conducts crosswalk enforcement regularly. The SR2S task force and stakeholder teams should develop priority areas in need of enforcement. One option to avoid the cost of providing physical police presence is to use innovative signage, such as in-roadway crosswalk signs or in-roadway warning lights, to alert motorists that children may be crossing, or speed feedback signs that indicate to motorists their current speed. Neighborhood speed watch programs, in which community members borrow a radar device and use it to record the license plate numbers of speeding vehicles, can also be effective.

Engineering

To provide safe access for children, school sites should have designated pedestrian access points that do not require students to cross in front of drop-off and pick-up traffic. Locations identified through the SR2S process should be considered for SR2S grant funding.

Streetscaping improvements should ensure adequate sight distance on all access routes, crossings, and intersections. School zone designations for speed limits should be an element of a comprehensive circulation plan that also includes school-based student as well as Police Department crossing guard programs and identification of safe routes for bicycling and walking to school.

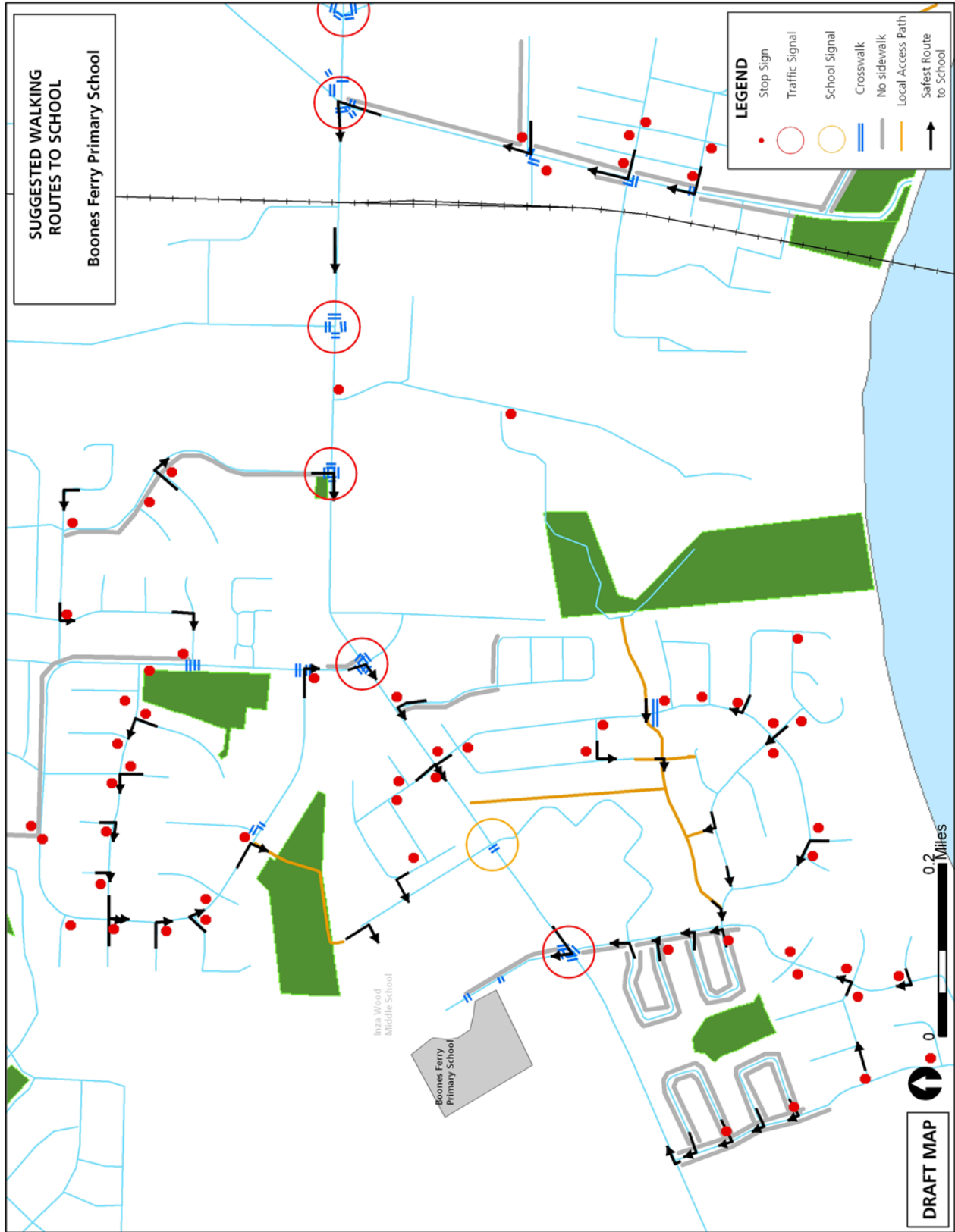
Suggested Route to School Maps

Suggested Route to School Maps were prepared for Boones Ferry Primary, Inza Wood Middle School, Boeckman Creek Elementary, and Wilsonville High School. Map 2 through Map 5 show the suggested routes to school for these four schools.

These maps are based on the process outlined in the 2003 MUTCD, Chapter 7. Section 7A.01 notes: "A school route plan for each school serving elementary to high school students should be prepared in order to develop uniformity in the use of school area traffic controls, and to serve as the basis for a school traffic control plan for each school. The school route plan, developed in a systematic manner by the school, law enforcement, and traffic officials responsible for school pedestrian safety, should consist of a map showing streets, the school, existing traffic controls, established school walk routes, and established school crossings."

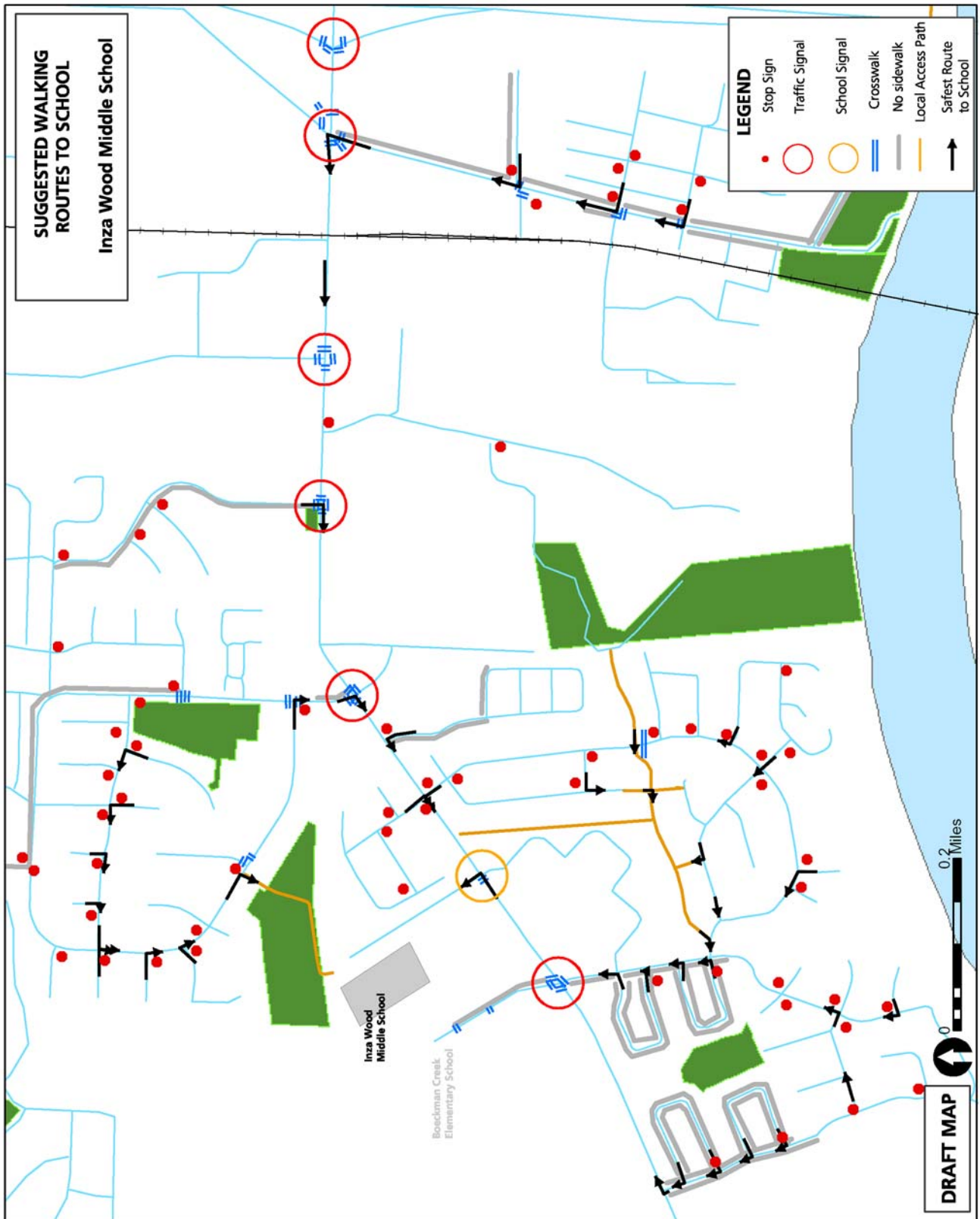
For each school, staff conducted a field visit to inventory the traffic controls, signage, crosswalks, and other physical conditions on streets surrounding the school. Factors for determining the "best" routes to a school along the street grid included the presence of traffic controls, crosswalks, or crossing guards at key crossing locations, and presence of sidewalks or bike lanes along street segments. In some cases, roadside paths or known off-street cut-throughs (such as a path leading to the back of a school) are noted as suggested routes. The suggested routes extend a distance of about one-half mile for elementary schools, and about one mile for junior high and high schools.

The Suggested Route Maps are intended to reflect a partnership between City and school officials. Each map should be reviewed and signed by both the School Principal and a City Engineer to ensure that they accurately reflect both the physical roadway conditions around the school and the walking patterns of students. It is recommended that the maps be reviewed and updated regularly to reflect changes in the roadway network, such as new traffic control or crosswalk locations. It is recommended that the maps be reviewed by the school officials at the beginning of each school year in order to confirm that the Suggested Routes shown are still the best ways for children to walk and bicycle to the school.

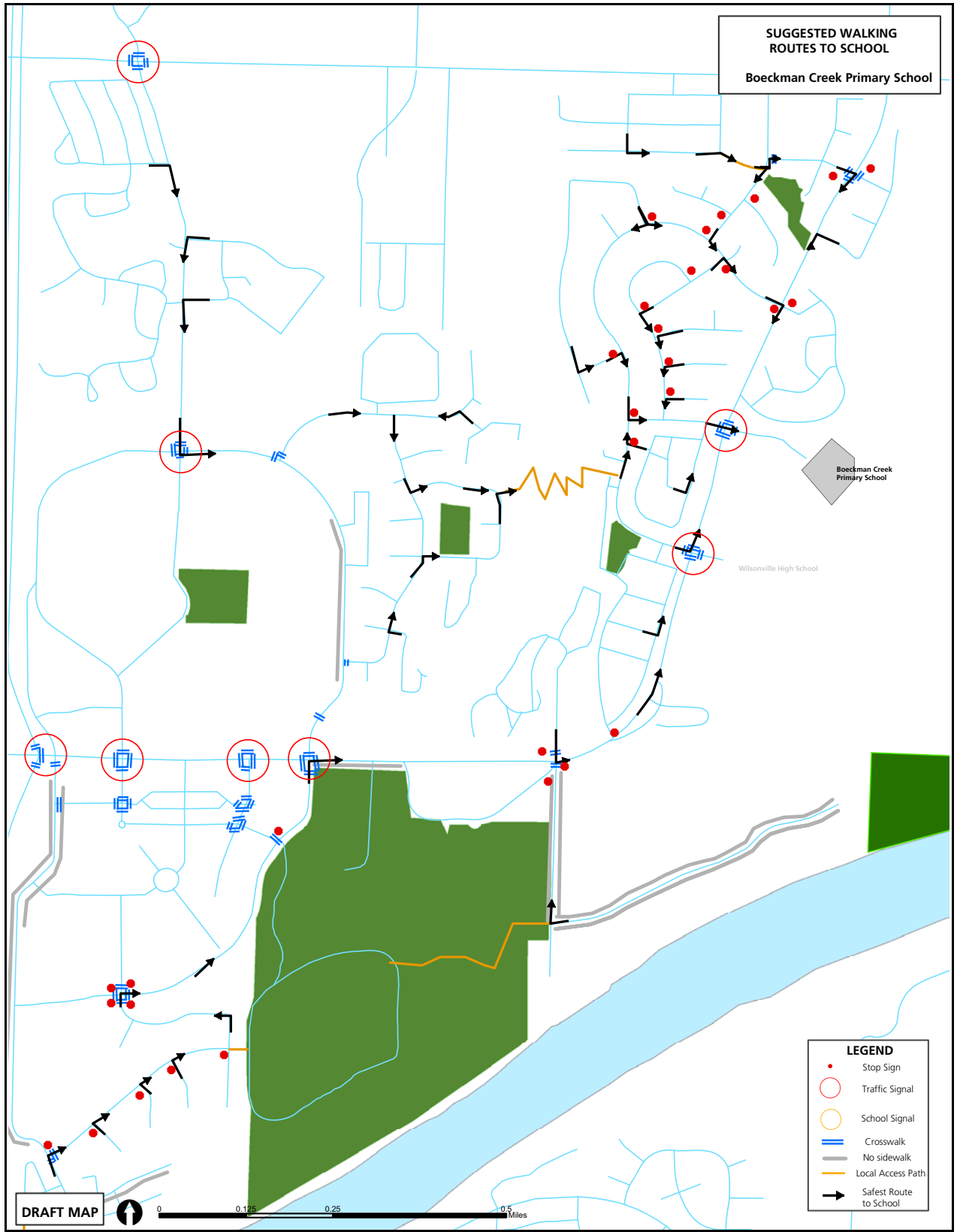


Map 2. Suggested Routes to School for Boones Ferry Primary

4. Recommended Bicycle and Pedestrian Programs

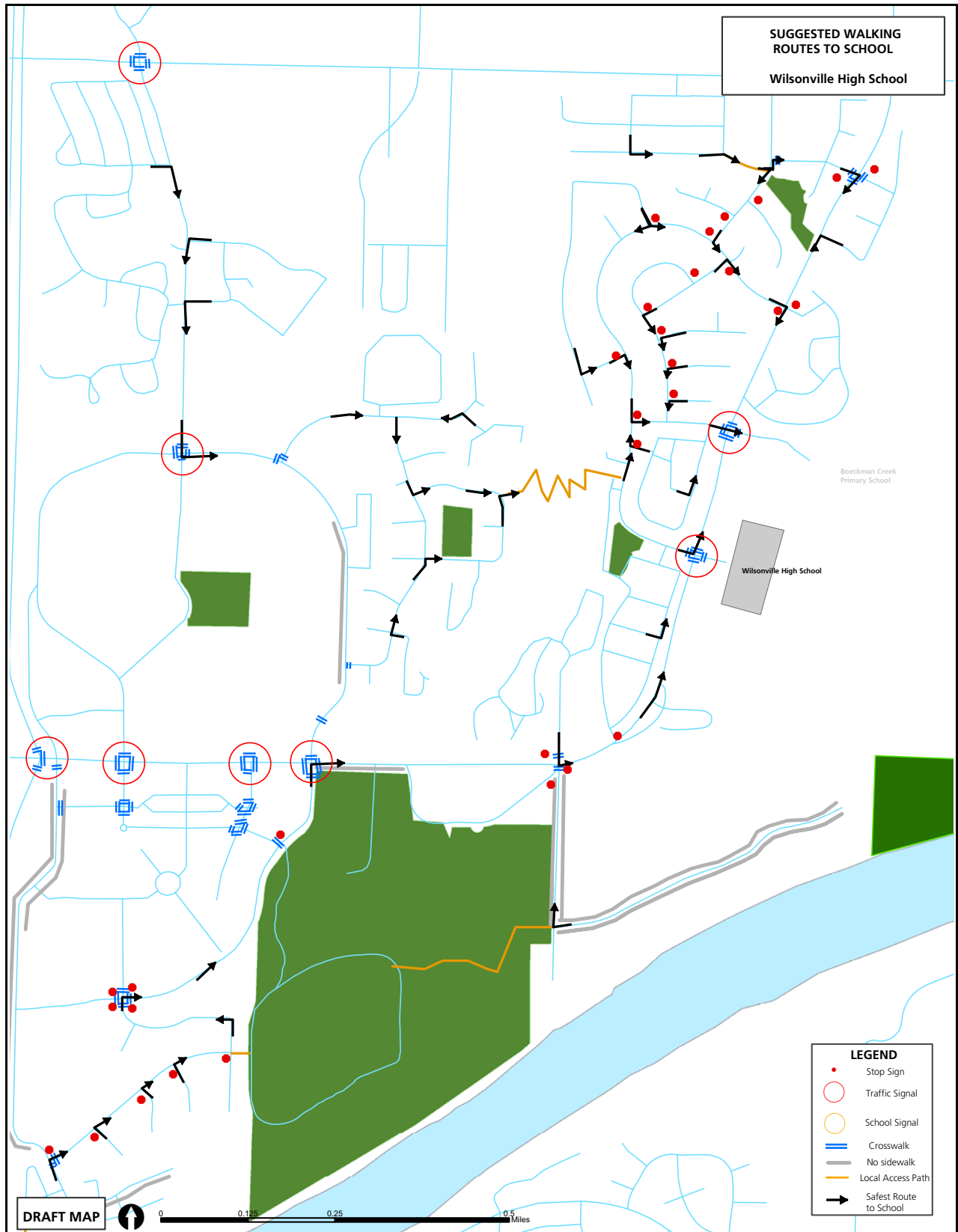


Map 3. Suggested Routes to School for Inza Wood Middle School



Map 4. Suggested Routes to School for Boeckman Creek Primary

4. Recommended Bicycle and Pedestrian Programs



Map 5. Suggested Routes to School for Wilsonville High School

Additional review and practice runs by parents are a key component to the successful use of the maps.

The City will assist in developing and distributing suggested route to school maps to local schools as part of the Master Plan and future SR2S efforts, subject to school approval and City resource availability. It is recommended that the City and schools work with the West Linn / Wilsonville School District to change the existing policy prohibiting the riding of bicycles and scooters on school property. This policy unnecessarily punishes those students who choose to ride to school.

Wilsonville High School (pop. 963) and Boeckman Creek Primary School (pop. 573):

Access is constrained by their location near Boeckman Creek, and the Wilsonville city boundary. Consequently, all vehicle traffic utilizes Wilsonville Road, creating traffic problems during the morning and afternoon time periods. One solution is to create stronger bicycle and pedestrian connections to the surrounding subdivisions, particularly just north of Boeckman Creek Primary. The neighborhoods are curvilinear, with many ending in cul-de-sacs. This helps control the amount of traffic, as well as traffic speed; however it also makes biking and walking trips longer and more difficult. Furthermore, an official Boeckman Creek Trail, in conjunction with the existing Boeckman Creek crossing, connected to the nearby neighborhoods would provide an alternative to Wilsonville Road for students coming from the west. Currently, all school traffic is routed to two intersections - Wilsonville Road and Meadow Loop for the high school, and Wilsonville Road and Meadows Parkway for the primary school.

Inza Wood Middle School (pop. 603) and Boones Ferry Primary School (pop. 730):

Also located off of Wilsonville Road, with only one access point each. The intersections of the school roads with Wilsonville Road are well marked with crosswalks. The intersection of Inza Wood School access road with Wilsonville Road has been improved with a light and traffic control devices to increase safety for the children. There is a path from the neighborhood to the north, through The Park at Merryfield and onto the school grounds. This path provides a safe off-street option for children in that neighborhood to walk or bike to school. The neighborhoods in this part of town share similar

characteristics with the neighborhoods around Wilsonville HS and Boeckman Creek Primary, and would also benefit from improved internal bicycle and pedestrian connections.

Other School District Property:

Additionally, the West Linn-Wilsonville School District owns property in the Frog Pond Area and south of Advance Road, both adjacent to the Wilsonville city limits. The Frog Pond parcels are located off of Boeckman Road/Advance Road and Stafford Road and straddle the Urban Growth Boundary. This property is currently for sale. The Advance Road property is the current focus for school expansions. Any new schools located in this area are likely to have similar issues to Wilsonville High School and Boeckman Creek Elementary School, given their close proximity to the school district property. Traffic generated by these schools will most likely utilize Boeckman Road/ Advance Road to access the school property, since most of the population is located south and east of the current site.

Funding

While much of the initial work involved in starting a SR2S program can be conducted by stakeholder team volunteers, eventually funding will be needed to plan and implement physical improvements, hold events, and develop and implement educational programs and materials.

Capital Funding

Capital funding for infrastructure improvements is available from a variety of sources. The SR2S task force should work with City staff agencies to identify all potential funding sources and to provide support on funding requests. Wilsonville may be able to pursue federal funds recently made available with the new Safe Routes to School Program established in the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFTEA-LU). This section of the bill provides \$612 million in funding over the next five years with no state receiving less than \$1 million per fiscal year. Other portions of SAFTEA-LU, such as the Transportation Enhancements (TE) and the Congestion Mitigation and Air Quality (CMAQ) funds may also provide funding opportunities for bicycle and pedestrian projects.

4. Recommended Bicycle and Pedestrian Programs

Program Funding

As Wilsonville's SR2S program develops, funding will be needed to support the overall program, including coordination assistance, purchasing incentives, printing newsletters, staffing events, and developing educational materials. Both school-based and program-based funding will be essential for success. When program funding is pursued, it should be emphasized that a SR2S program improves the entire community by relieving traffic congestion, contributing to cleaner air, creating alternative transportation routes, and improving the health and safety of children and the entire community. In order to maintain and expand the program, new sources of funding need to be obtained. Other possible funding sources include:

- Corporations and Businesses: Local corporations and businesses may be able to provide cash, prizes, and/or donations, such as printing services, through community giving or other programs. Parents or other members of stakeholder teams may be a good source for contacting companies.
- Foundations. There are institutions throughout the country that provide funding to non-profit organizations. The Foundation Center is a national organization dedicated to collecting and communicating information about philanthropy in the U.S., and is an excellent source for researching potential foundation funding sources. Potential foundation funding sources can be searched by geographic region and by category. Some categories that may be applicable include transportation, health, environment, and community building.
- Individuals. Statistically, individuals give more money than corporations and foundations combined. A local fund drive can quickly reach a large number of people if outreach is conducted by stakeholder team members.
- Events. Many SR2S programs have raised funds by holding special events, often using a related themed event such as a walkathon or a bicycling event. More traditional fundraising efforts, such as bake sales, concerts, talent shows, etc., can also help raise funds.
- Parent Teacher Associations (PTAs) and School Districts. Many PTAs have funds to distribute to school programs, and often schools have their own safety funding sources. Stakeholder teams

should work with local PTAs and school districts to see if there is a method for applying for a grant.

- City and County Funds. Some cities and counties allocate funds to support SR2S programs. Some also allocate a portion of their local Transportation Enhancement funds to SR2S educational programs.
- State Funds. Each state receives Federal Highway Safety Funds, also called 402 Funds. Although each state handles this program differently, most funding is available on a competitive basis for projects that increase road safety.

Bicycle Parking

Lack of secure, convenient bicycle parking is a deterrent to bicycle travel. Bicyclists need parking options that can provide security against theft, vandalism, and weather. Like automobile parking, bicycle parking is most effective when it is located close to trip destinations, is easy to access, and is easy to find. Where quality bicycle parking facilities are not provided, determined bicyclists lock their bicycles to street signs, parking meters, lampposts, or trees. These alternatives are undesirable as they are usually not secure, may interfere with pedestrian movement, and can create liability or damage street furniture or trees.

Bicycle parking facilities that are conveniently located and adequate in both quantity and quality can help to reduce bicycle theft and to eliminate inappropriate parking, benefiting everyone. Bicycle parking is highly cost-effective compared to automobile parking.

Wilsonville's bicycle parking is generally adequate; however, there are a few noticeable locations such as Town Center Loop where bicycle parking is missing, lacking, or difficult to access. Chapter 4: General Development Regulations of the Wilsonville Development Code contains language governing the provision of bicycle parking in Wilsonville. Section 4.155, Table 5 provides the minimum and maximum parking standards, as well as the minimum bicycle parking requirements, for various land uses. For example, Wilsonville Code requires: one space per 4,000 sq feet for commercial retail, one space per 1,000 sq ft for a library (minimum of six spaces), and eight spaces per class (above 2nd grade) for an elementary or middle school.

The parking minimums, particularly for the public use spaces such as the school and library, exceed the minimum requirements set out in the Oregon Bicycle and Pedestrian Plan, which is commendable. However, the commercial parking requirements are not as stringent as the Oregon Bicycle and Pedestrian Plan, occasionally leading to a lack of accessible bicycle parking.

The City should revisit the current bicycle parking requirements and revise them if deemed necessary. The City might also undertake a bicycle parking analysis to determine whether all of the bicycle parking required by city code is being provided, and if so, that it is being provided in locations that are visible and free of obstacles. It should also be noted that Wilsonville city code only establishes parking minimums, and new commercial establishments should be encouraged to exceed the standards as set out in the Wilsonville city code.

Bicycle Parking can be broadly defined as either short-term or long-term parking.

Short-Term Parking. Bicycle parking meant to accommodate visitors, customers, messengers and others expected to depart within two hours. Requires approved standard rack, appropriate location and placement, and weather protection.

Long-Term Parking. Bicycle parking meant to accommodate employees, students, residents, commuters, and others expected to park more than

two hours. This parking is to be provided in a secure, weather-protected manner and location.

Short-Term Bicycle Parking

Short-term bicycle parking facilities are intended to provide short-term bicycle parking, and include bicycle racks which permit the locking of the bicycle frame and one wheel to the rack and support the bicycle in a stable position without damage to wheels, frame or components. Acceptable rack types are shown in Figure 1 and Figure 2; other acceptable racks include ring racks.

Short-term bicycle parking is currently provided at no charge at most locations. Such facilities should continue to be free, as they provide minimal security, but encourage cycling and promote proper bicycle parking.

The following recommendations come from the Oregon Bicycle and Pedestrian Plan regarding dimensions for short-term bicycle parking, and could be adopted by Wilsonville as bicycle parking standards:

- Bicycle parking spaces should be at least six feet long and two feet wide, and overhead clearance in covered spaces should be at least seven feet.
- A five-foot aisle for bicycle maneuvering should be provided and maintained beside or between each row of bicycle parking.
- Bicycle racks or lockers should be securely anchored to the surface or structure.

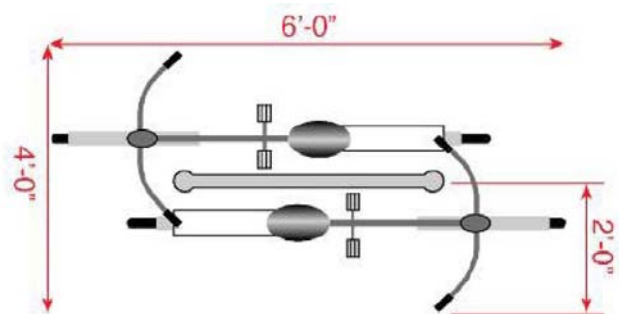


Figure 1. Inverted “U” Rack

4. Recommended Bicycle and Pedestrian Programs

Ribbon, Spiral, or Freestanding Racks

(with access from only one side)

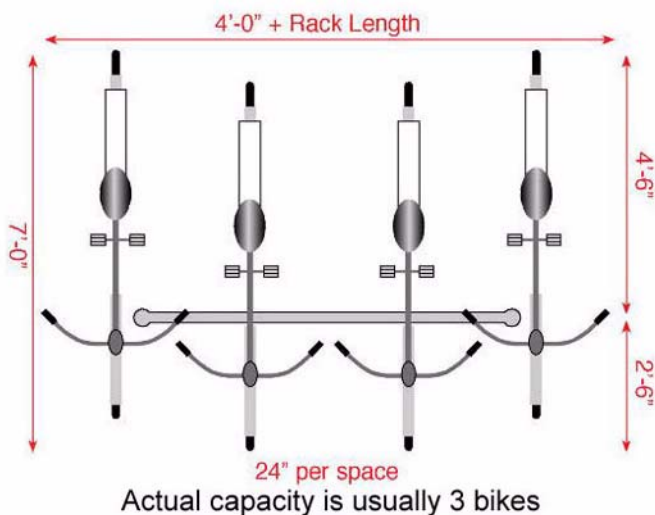


Figure 2. Ribbon, Spiral, or Freestanding Rack



Sleeve ring rack



Bolt-on ring rack

On-Street Bicycle Parking

Where racks are not possible on sidewalks, because of narrow sidewalk width, sidewalk obstructions, or other issues, bicycle parking can be created in the street where on-street vehicle parking is allowed. Two possible options for creating parking in the street include: clustered racks in a car parking space protected by bollards, and racks installed on sidewalk bulb-outs where adequate sight distance can be provided.

Installing bicycle parking directly in a car parking space incurs only the cost of the racks and bollards or other protective devices. A bulb-out is more expensive to install, and can be prohibitively expensive if substantial drainage and/or utility work is necessary. Bulb-out

installation alone can exceed \$30,000, not including bicycle rack costs. Costs may be less if the bulb-out is installed as part of a larger street or pedestrian improvement project.

While on-street bicycle parking may take space away from the automobile parking, there are ways to mitigate auto parking loss:



Additional auto parking spaces can be created by consolidating driveways, moving fire hydrants, or otherwise finding places where it may be possible to admit auto parking where it is currently proscribed. Options for combining bicycle and motorcycle parking also exist.

On-street bicycle parking may be installed at intersection corners or at mid-block locations. Mid-block on-street parking may be closer to cyclists' destinations, although it could force cyclists to dismount and walk to the parking site if access from the street is difficult or dangerous. Combining a mid-block pedestrian crossing with mid-block on-street parking facilities could mitigate this situation.

Table 9. Rack Placement Guidelines

Design Issue	Recommended Guideline
Minimum Rack Height	To increase visibility to pedestrians, racks should have a minimum height of 33 inches or be indicated or cordoned off by visible markers.
Signing	Where bicycle parking areas are not clearly visible to approaching cyclists, signs at least 12 inches square should direct them to the facility. The sign should give the name, phone number, and location of the person in charge of the facility, where applicable. Where Class I parking is provided by restricted access, the sign should state that the enclosure must be kept locked at all times.
Lighting	Lighting of not less than one foot-candle illumination at ground level should be provided in all bicycle parking areas.
Frequency of Racks on Streets	In popular retail areas, two or more racks should be installed on each side of each block. This does not eliminate the inclusion of requests from the public which do not fall in these areas. Areas officially designated or used as bicycle routes may warrant the consideration of more racks.
Location and Access	<p>Access to facilities should be convenient; where access is by sidewalk or walkway, curb ramps should be provided where appropriate and ADA compliant. Parking facilities intended for employees should be located near the employee entrance, and those for customers or visitors near the main public entrances. (Convenience should be balanced against the need for security if the employee entrance is not in a well-traveled area).</p> <p>Bicycle parking should be clustered in lots not to exceed 16 spaces each. Large expanses of bicycle parking make it easier for thieves to operate undetected. A clearance of 24 inches between adjacent bicycles and from walls or other obstructions should be maintained.</p>
Locations within Parking Garages	When possible, bike racks should be located within the view of an attendant. Bike racks should not be placed immediately adjacent to the street, where components would be susceptible to theft.
Locations within Buildings	Provide bike racks within 50 feet of the entrance. Where a security guard is present, provide racks behind or within view of a security guard. The location should be outside the normal flow of pedestrian traffic.
Locations near SMART Stops	To prevent bicyclists from locking bikes to SMART bus pole stops - which can create access problems for transit users, particularly those who are disabled - racks should be placed in close proximity to SMART stops where there is a demand for short-term bike parking.
Locations within a Campus-Type Setting	Racks are useful in a campus-type setting at locations where the user is likely to spend less than two hours, such as classroom buildings. Racks should be located near the entrance to each building. Where racks are clustered in a single location, they should be surrounded by a fence and watched by an attendant. The attendant can often share this duty with other duties to reduce or eliminate the cost of labor being applied to the bike parking duties; a cheaper alternative to an attendant may be to site the fenced bicycle compound in a highly visible location on the campus. For the long-term parking needs of employees and students, attendant parking and/or bike lockers are recommended.
Retrofit Program	In established locations, such as schools, employment centers, and shopping centers, the City should conduct bicycle parking audits to assess the bicycle parking availability and access, and add in additional bicycle racks where necessary. Town Center Loop is an excellent candidate for this type of audit.

4. Recommended Bicycle and Pedestrian Programs

Long-Term Bicycle Parking

Long-term bicycle parking facilities are intended to provide secure long-term bicycle storage. Long-term facilities protect the entire bicycle, its components and accessories against theft and against inclement weather, including wind-driven rain. Examples include lockers, check-in facilities, monitored parking, restricted access parking, and personal storage.

Long-term parking facilities are more expensive to provide than short-term facilities, but are also significantly more secure. Although many bicycle commuters would be willing to pay a nominal fee to guarantee the safety of their bicycle, long-term bicycle parking should be free wherever automobile parking is free.

An ideal location for long-term bicycle parking is the site of the proposed commuter rail station. Bicyclists would be able to bike to the station and lock their bicycles in a secured location, knowing that they would have reliable transportation once they returned to the station. Other potential locations are large

employers and institutions where people use their bikes for commuting, and not consistently throughout the day. Xerox has installed a number of bicycle lockers for commuters. Another advantage of lockers is that they can be configured to more easily accommodate different styles of bicycles, such as recumbent bicycles.



Solid construction Cycle-Safe lockers

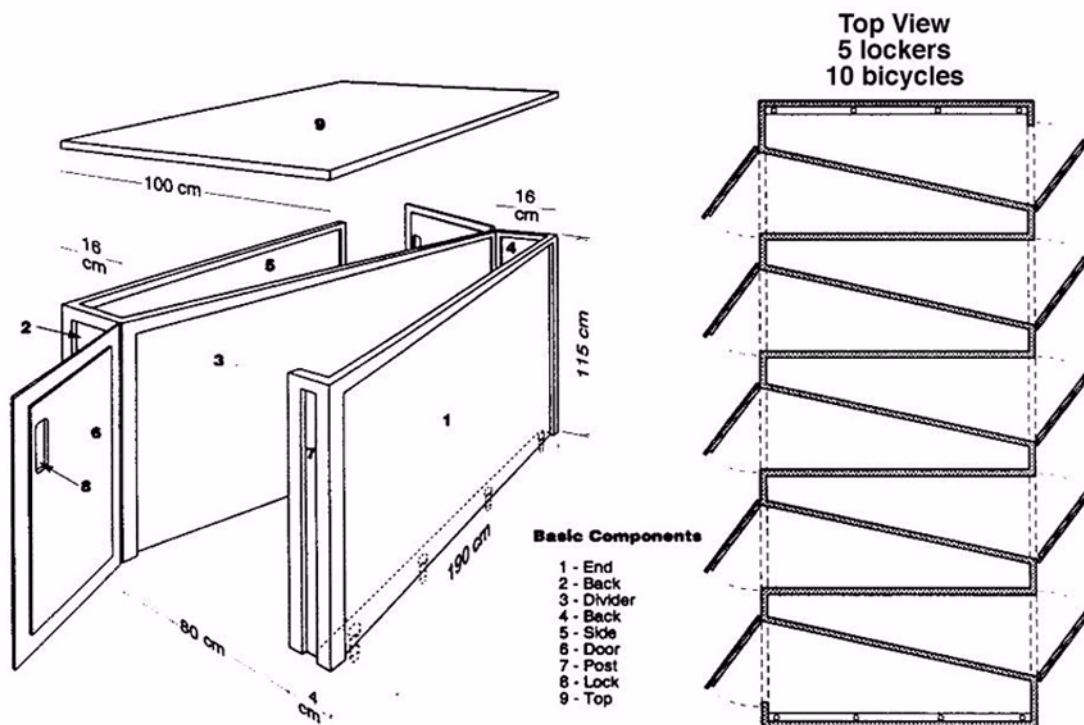


Figure 3. Cycle-Safe Lockers

City Programs

Alternative Transportation Coordinator/Advisory Committee

Wilsonville should enhance the existing Transportation Options coordinator position funded by SMART. This position is responsible for implementing the walkSMART program and other programs directed at reducing the number of vehicle miles traveled in the city. This position would oversee implementation of the various related plans, such as the Bicycle and Pedestrian Master Plan, as well as the Transit Master Plan. This position would also coordinate with other departments, such as Public Works and Community Development to ensure that the needs of bicyclists and pedestrians are being considered in all new projects.

Along with a coordinator, the city should encourage the formation of a full-time Bicycle and Pedestrian Advisory Committee that meets regularly to identify and discuss the needs of bicyclists and pedestrians within the City of Wilsonville.

Wayfinding / Signage Program

The ability to navigate through a town or city is informed by landmarks, natural features, and other visual cues. A signage system is a key component of a navigable environment and would inform pedestrians, bicyclists, and motorists, while also enhancing the identity of Wilsonville.

An effective wayfinding system communicates information clearly and concisely. Wilsonville currently has a Wilsonville Trail signage program, and is encouraged to continue those efforts. Similar signs could be posted along Wilsonville Road and other well-traveled bike routes. For example, a sign placed at Wilsonville Road and Boones Ferry Road could indicate to bicyclists that Boones Ferry Park is to the south, Graham Oaks Natural Area and Commuter Rail are to the west, and



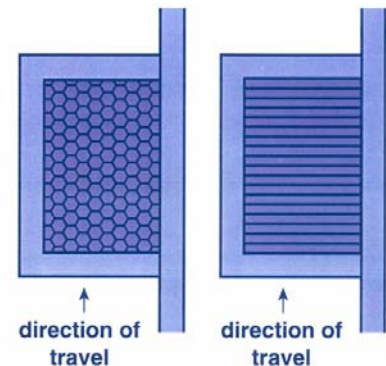
Wilsonville Trail signage

Town Center Loop and Memorial Park are to the east. A sign at Kinsman Road would then reinforce that Graham Oaks Natural Area and schools are still west, while Commuter Rail is to the north. The directions could be posted either separately, as shown in the photo to the right, or beneath the Wilsonville Trail or other city logo directly on the sign. Note that too many road signs tend to clutter the right-of-way, and it is recommended that these suggested signs be posted at a level most visible to bicyclists and pedestrians, rather than per vehicle signage standards. Care also needs to be taken that any signs are posted at the proper location and orientation to be visible to bicyclists.

Placing signs throughout the city indicating to bicyclists and pedestrians direction of travel, location of destinations, and the time/distance to those destinations will increase users' comfort and accessibility to the bicycle and pedestrian system. Additional information about signage and other network amenities can be found in the Design Standards and Guidelines chapter.

Drainage Grate Retrofit

Wilsonville has taken a number of steps to make storm drainage grates bicycle safe, as required by ORS 810.150. In Council minutes from early 2005, it was noted that, "The City has



completed a program to retrofit catch basin inlets that had parallel metal strips where bicycle tires could slip into the grating. This retrofit program was a joint effort between our Fleet Crew (who welded crossbars into each of the old-style grates) and our Roads Crew (who removed/reinstalled the grates). Now bicyclists can safely navigate all City streets without risk of having their tires drop into catch basin inlets."

Where the City has retrofitted the existing drainage grates, the City has begun a program to replace those grates as the road is resurfaced, since the new grates still have spacing that is narrow enough to catch narrow bicycle tires, or cause flat tires. In new road and curb construction, Wilsonville is installing inlets in the

4. Recommended Bicycle and Pedestrian Programs

curb face to eliminate the drainage grates entirely. If a street surface grate is required for drainage, care is taken to ensure that the grate is flush with the road surface.

Internal Circulation Standards

Pedestrian circulation in larger residential and commercial developments is influenced by both the infrastructure provided for the pedestrian as well as the infrastructure and design of the automotive circulation and parking.

Automobile Infrastructure

Parking lots should be located in such a manner as to encourage pedestrian access to the development, connect uses to the street and decrease the distance between adjacent developments. To accomplish this, parking should be located behind and to the side of buildings wherever possible.

Landscaping should be provided between the pedestrian circulation system and automobile areas to provide protection, security and accessibility for the pedestrian while providing sufficient sight distance. Parallel parking can also be used to buffer pedestrian routes from moving vehicles.

Pedestrian Infrastructure

An internal pedestrian circulation system should:

- Be barrier-free and designed for safety and security;
- Ensure continuous sidewalks and safe crossing points;
- Connect all uses within a development (buildings, parking areas, pad buildings etc.);
- Clearly link public sidewalks with all internal walkways;
- Clearly link the individual sites within a development to each other and to surrounding off-site uses (mixed-use and residential areas);
- Be defined with landscaping, paving, and pedestrian scaled lighting;
- Meet ADA guidelines; and
- Provide adequate sight distance.

Pedestrian circulation routes could be composed of treated surfaces such as scored or brushed concrete in order to differentiate the pedestrian system from the auto system. Where pedestrian routes cross an auto circulation route, striping should be provided.

Pedestrian connections should be designed to provide the most direct route to the SMART stops to avoid out-of-direction travel and minimize travel distance. Direct routes will also reduce the damage to landscaping by providing pedestrians with other preferred routes. Connections should be a continuation of the sidewalks and trail system to reduce dead-end paths.

To provide greater opportunity for pedestrian connectivity and to prevent autos from having to use the public street system to travel between adjacent developments, parking and pedestrian circulation should be designed to accommodate connections between developments.¹

Pedestrian circulation plans should be required with each large lot development. These plans must emphasize connectivity through sidewalk design, traffic circulation, landscaping, and lighting.

Bicycle Infrastructure

Internal circulation for bicyclists is as important a consideration as for cars and pedestrians. Bicyclists should have a clearly delineated travel path through any development, as well as clear travel paths that link individual sites within the development and provide safe travel.

In smaller developments or constrained situations, this can be accomplished through directional signage, lane markings, and signage that clearly show a shared road system (such as the shared lane marking), and signage and markings indicating slow speeds (10 mph) required while in the development.

In larger developments, bike lanes should be striped to both indicate the travel route to bicyclists and to constantly inform motorists to expect bicyclists within the development. The bike lanes should be supplemented with appropriate directional signage for bicyclists. Signage and markings indicating slow speeds (10 mph) are also recommended.

Bicycle circulation plans should be required with each large lot development. In addition, it is recommended that the city perform a comprehensive code review to

1. Clark County, Washington Appendix A: Commercial Design Guidelines

ensure that the needs of pedestrians and bicyclists are being met as Wilsonville continues to grow.

Capital Spot Improvement Program

Having the ability to respond quickly to the requests of bicyclists and pedestrians will enhance Wilsonville's standing as a bicycle and pedestrian friendly city while demonstrating a commitment to alternative transportation modes. This program could be funded once a year, with all funds dedicated to smaller spot improvements identified by city staff and residents. Such improvements might include:

- Striping and signing of a particular trail to increase safety and trail user compliance along a heavily-used trail.
- Adding bike parking to locations that are currently lacking appropriate or insufficient parking, such as areas of Town Center.
- Sidewalk infill to safely connect vital pedestrian routes, especially in school areas and to transit.
- Adding appropriate directional and informational signage along trails, sidewalks, and bicycle routes.
- Striping of bicycle lanes where the striping has worn away, such as the bike lane on Elligsen Rd westbound approaching I-5.
- ADA improvements in parks.

Bike Maps

Put downloadable maps of all trails and paths on the city's website and allow others to mirror them. Make sure to put high (as well as low) resolution versions up for those with access to reasonable printers.

Becoming a Bicycle Friendly Community

The Bicycle Friendly Community (BFC) Campaign is a national awards program that recognizes municipalities that actively support bicycling. A Bicycle-Friendly Community provides safe accommodations for cycling and encourages its residents to bike for transportation and recreation. The Bicycle Friendly Community Campaign is administered by the League of American Bicyclists, an education and advocacy organization working to bring better cycling to communities around the country. The BFC designation is awarded at one of four levels (from lowest to highest): bronze, silver, gold, and platinum. To date, there have been no platinum designations awarded. In Oregon, five communities

have been designated Bicycle Friendly Communities - Portland (Gold), Corvallis (Gold), Eugene (Silver), Ashland (Bronze) and Beaverton (Bronze).

What Does it Take?

Determining whether a community is bicycle-friendly involves considering many factors and conditions. The application is an audit of a community's efforts to provide a more bicycle-friendly environment. The audit reviews engineering, education, encouragement, enforcement, and evaluation and planning efforts for bicycling. The entire application and feedback from cyclists in the community is sought to determine whether the League will award the BFC designation. The application is available online at <http://www.bicyclefriendlycommunity.org/apply.cfm>. 24. The BFC campaign effort can be initiated by anyone; however, the application process requires information that only the city and city staff would possess, and requires the enthusiastic support of Wilsonville.

Opportunity

There are a number of short- and long-term steps Wilsonville can take to make it a "Bicycle Friendly Community."

Commit to becoming a BFC. The League of American Bicyclists provides an "Action Plan for Bicycle Friendly Communities," which identifies ten specific steps that the community will take to improve bicycling conditions.

Adopt the action plan publicly with full backing of the mayor and city council.

Action Plan for Bicycle Friendly Communities

1. Adopt a target level of bicycle use (e.g. percent of trips) and safety to be achieved within a specific timeframe, and improve data collection necessary to monitor progress.
2. Provide safe and convenient bicycle access to all parts of the community through a signed network of on- and off-street facilities, low-speed streets, and secure parking. Local cyclists should be involved in identifying maintenance needs and ongoing improvements.
3. Establish information programs to promote bicycling for all purposes, and to communicate the many benefits of bicycling to residents and businesses (e.g. with bicycle maps, public relations

4. Recommended Bicycle and Pedestrian Programs

campaigns, neighborhood rides, a ride with the Mayor).

4. Make the City a model employer by encouraging bicycle use among its employees (e.g. by providing parking, showers and lockers, and establishing a city bicycle fleet).
5. Ensure all city policies, plans, codes, and programs are updated and implemented to take advantage of every opportunity to create a more bicycle-friendly community. Staff in all departments should be offered training to better enable them to complete this task.
6. Educate all road users to share the road and interact safely. Road design and education programs should combine to increase the confidence of bicyclists.
7. Enforce traffic laws to improve the safety and comfort of all road users, with a particular focus on behaviors and attitudes that cause motor vehicle/bicycle crashes. Bicyclists should be educated to always ride in the direction of vehicle traffic.
8. Develop special programs to encourage bicycle use in communities where significant segments of the population do not drive and where short trips are most common, such as the Safe Routes to School program discussed earlier in this section.
9. Promote intermodal travel between SMART, commuter rail, and bicycles e.g. by putting bike racks on buses, improving parking at transit, and improving access to rail and public transport vehicles.
10. Establish a citywide, multi-disciplinary committee for non-motorized mobility to submit to the Mayor/Council a regular evaluation and action plan for completing the items in this action plan.

Educate community members and the city of Wilsonville staff on how to become more bicycle friendly. This could entail holding a workshop or other public forum to introduce community leaders to the basic elements of a BFC. Work with the Bicycle Transportation Alliance (BTA) and Safe Routes to School efforts to further the education effort.

Implement the Action Plan. Once the Action Plan has been adopted, Wilsonville needs to ensure that the Plan is implemented and prepare and submit its BFC application.



5. Existing Conditions

Introduction

Connection to Parks

Regional Connections

Bicycle Parking

5. Existing Conditions

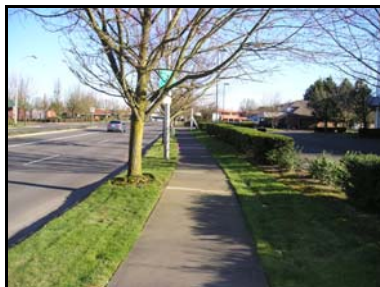
Introduction

The network recommended in the Bicycle and Pedestrian Master Plan builds upon the strong foundation that Wilsonville has established for the City's existing bicycle and pedestrian network. The City of Wilsonville covers about seven square miles and measures about four miles from north to south. The City currently has 21 miles of sidewalk on the arterial streets and even more on the local residential streets. Bicyclists enjoy 11.1 miles of bike lanes with more under construction. There are currently 3.3 miles of shared use paved trails and 2.2 miles of unpaved trails. More than 16 additional miles of shared use path are proposed in newly adopted plans, including The Tonquin Trail Feasibility Study, Memorial Park Trails Plan, Wilsonville Tract Master Plan (Graham Oaks), and the Villebois Master Plan.

Paved city trails and earthen local trails are found throughout many of Wilsonville's parks, such as Memorial Park and Town Center Park. Informal earthen trails can be found along the Boeckman Creek corridor, and paralleling Boeckman Road. Other locations with either paved city trails or local trails include:

- The Park at Merryfield
- Canyon Creek Park
- Landover Park
- Tranquil Park
- Water Treatment Plant Park

Sidewalk connections are fairly comprehensive and well maintained in much of Wilsonville. However, most of Old Town (the original town area along Boones Ferry Road south of Wilsonville Road) and its



surrounding neighborhoods, the Fox Chase neighborhood, Charbonneau, and some isolated industrial areas are lacking a good, connected pedestrian system. Additionally, some major collectors, such as Boeckman Road, have an insufficient pedestrian environment. These key network gaps, which were identified in the Recommended Bicycle and Pedestrian Network chapter, as well as the location of existing sidewalks on major circulation routes and trails, are shown on Map 6 on page 81. Additional difficulties encountered by pedestrians within Wilsonville include:

- Missing sidewalks force pedestrians to either cross the road back and forth—increasing the out of distance travel—or to travel in the right-of-way or shoulder of the road.
- Poor crossings in several locations, including: near City Hall, from the Mentor Graphics path across Boeckman Road, and across Canyon Creek by Kinetic.

Bicycle lanes in Wilsonville are typically located on roadways with traffic volumes exceeding 3000 vehicles per day. Bicycle lanes currently exist on the following roads:



- Wilsonville Road
- Canyon Creek Road
- 95th Avenue
- Boberg Road
- Kinsman Road
- Memorial Drive
- Burns Way
- Day Road
- Parkway Center Drive

And on portions of the roads listed below:

- Boones Ferry Road
- Main Street
- Barber Street

- Parkway Avenue
- Park Place
- Jessica Street
- Rebekah Street
- Boeckman Road

The bicycle lanes are largely well-marked and maintained, providing a safe travel lane for bicyclists. Many of the residential streets easily accommodate bicyclists of all ages and currently have little need for dedicated bicycle facilities. The location of existing bicycle lanes and key network gaps identified in the Recommended Bicycle and Pedestrian Network chapter are shown on Map 7 on page 83.

Connection to Transit

Ensuring a strong bicycle and pedestrian link to transit is an important part of making non-motorized transportation a part of daily life in Wilsonville. There are four main components of bicycle/pedestrian - transit integration:

- Allowing bicycles on transit
- Offering benches, shelters, schedules, bicycle parking, and other amenities at transit locations
- Improving connections between pathways, bikeways, and transit
- Encouraging usage of bicycle and transit programs

Currently, all buses within the SMART fleet are equipped to carry two bikes on the front of the bus. However, if the racks are full, cyclists often must wait for the next bus, though bikes may be brought into the bus at the driver's discretion.

In Wilsonville, the majority of the SMART stops have excellent pedestrian access, as shown on Map 8 on page 85, with continuous sidewalks on both sides of the streets. However, there are a number of stops that lack an adjacent sidewalk or path from nearby buildings, decreasing accessibility for all users, especially during the winter months when inclement weather is expected. A number of the transit stops lack amenities such as a bench, shelter, and schedule. This decreases the attractiveness of transit as a viable transportation option.

The bikeway network in Wilsonville also provides very good access for bicyclists to transit. Many of the current SMART stops are located near the bikeway network, as shown on Map 8, as is the identified

location of the future Commuter Rail station. However, as was noted above, most of the transit stops are very simple, in most cases only a sign identifying the location as a SMART stop. The existing conditions of the Boeckman Rd overpass, a key connection to the proposed commuter rail site, are not favorable for bicyclists or pedestrians. The lack of adequate short- and long-term bicycle parking facilities, particularly at the existing park and ride station in Town Center, decreases the likelihood that someone will commute to the station by bicycle. The Transit Master Plan will address these deficiencies.

Connection to Parks

Bicyclists and pedestrians in Wilsonville enjoy a strong connection to the existing parks. All of the parks can be accessed by either biking or walking, with some type of dedicated facility (sidewalk, bike lane, or shared use path) available for reaching each park. Some of the parks, however, do not have strong connections to other logical destinations. For example, the lack of a good bicycle and pedestrian connection between Boones Ferry Park and the Willamette River Water Treatment Plant Park is a noticeable gap in the existing bicycle and pedestrian network.

Regional Connections

The State recently placed an increased emphasis on bicycle tourism with the dedication of the Willamette Valley Scenic Bikeway that stretches from Armitage County Park just north of Eugene to Champoeg State Park, Wilsonville is well situated to capitalize on its location as the regional bikeway hub for the southernmost portion of the Portland metropolitan area and the rural Willamette Valley areas of Clackamas, Washington, and Yamhill counties. Wilsonville could also serve as the regional gateway to the Willamette Valley Scenic Bikeway.

Currently, bicyclists must use the roadway to reach all regional destinations. This poses some difficulties, due to natural barriers such as the Willamette River, narrow high-volume roads leading into Wilsonville, and the topography of the surrounding land. Additionally, Bike lanes are lacking on 7 of the eight "regional connectors": Boones Ferry Road, Elligsen Road, Stafford Road, Grahams Ferry Road, Wilsonville Road (westbound), Miley Road(westbound)/Butteville Road, Miley Road (eastbound). Airport Road is the

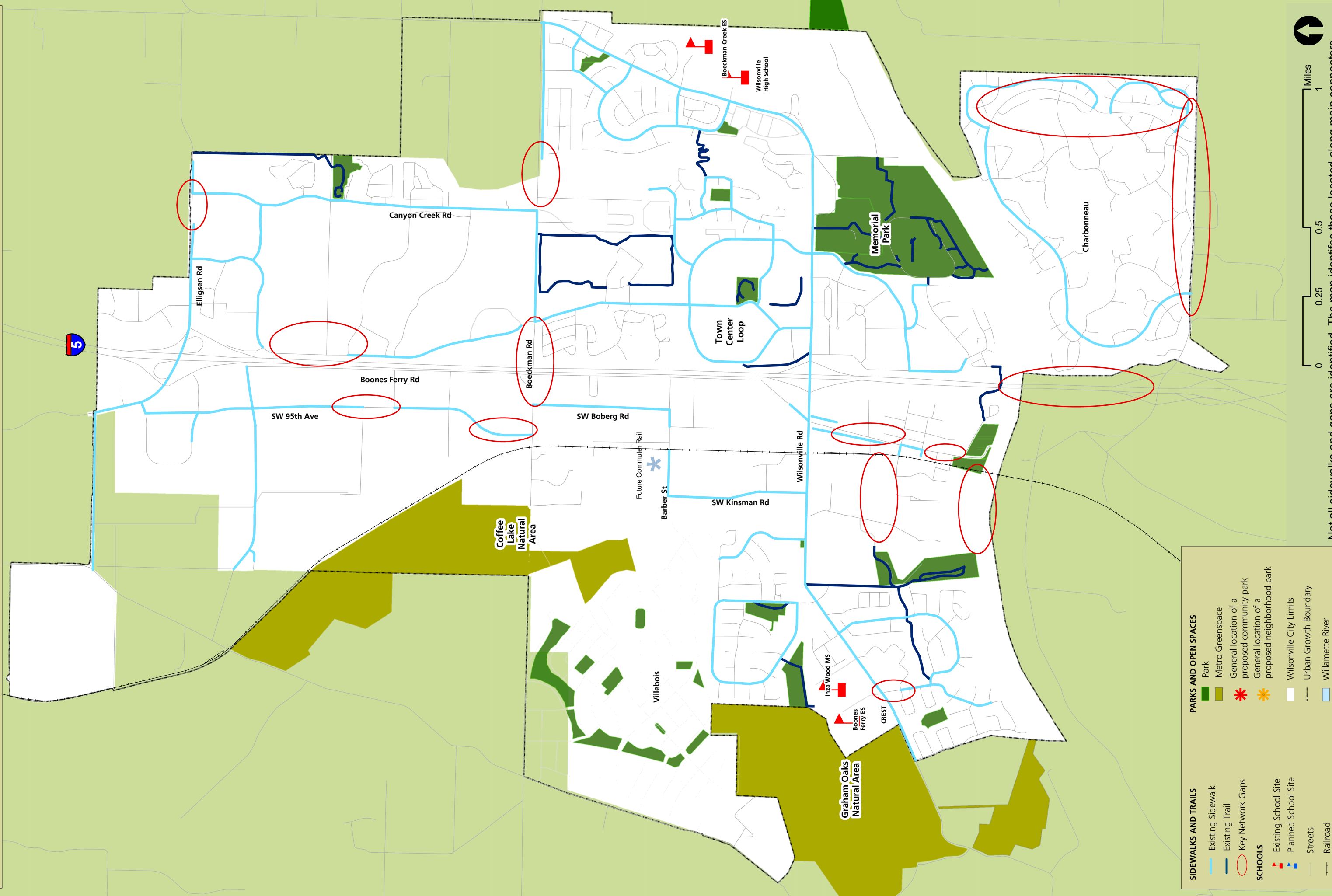
only existing bikeway leaving the city that provides bike lanes. This issue is discussed further in the next section.

Bicycle Parking

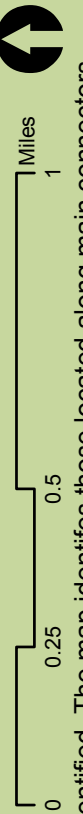
The provision of bicycle parking is an important component in planning bicycle facilities and encouraging widespread use. Minimum bicycle parking requirements for various land uses are set out in the Wilsonville Development Code, Section 4.155, Table 5. Chapter 5 of the 2003 TSP also addressed requirements for the provision and installation of bicycle parking. Bicycle parking should be provided as part of multi-family residential developments and all commercial, industrial and institutional developments; transit transfer stations, and park-and-ride lots.

In completing fieldwork, and in discussions with the public, there is a general perception that not enough bicycle parking is provided, particularly in desirable locations such as the Town Center area. The quality of bicycle parking made available can be substandard due to the style of rack chosen or the placement of the bicycle rack. Bicycle parking is discussed further in Chapter 2, Recommended Bicycle and Pedestrian Programs.

Map 6: Existing Sidewalks and Trails



SIDEWALKS AND TRAILS		PARKS AND OPEN SPACES	
	Existing Sidewalk		Park
	Existing Trail		Metro Greenspace
	Key Network Gaps		General location of a proposed community park
	Existing School Site		General location of a proposed neighborhood park
	Planned School Site		Wilsonville City Limits
	Streets		Urban Growth Boundary
	Railroad		Willamette River



Not all sidewalks and gaps are identified. The map identifies those located along main connectors.

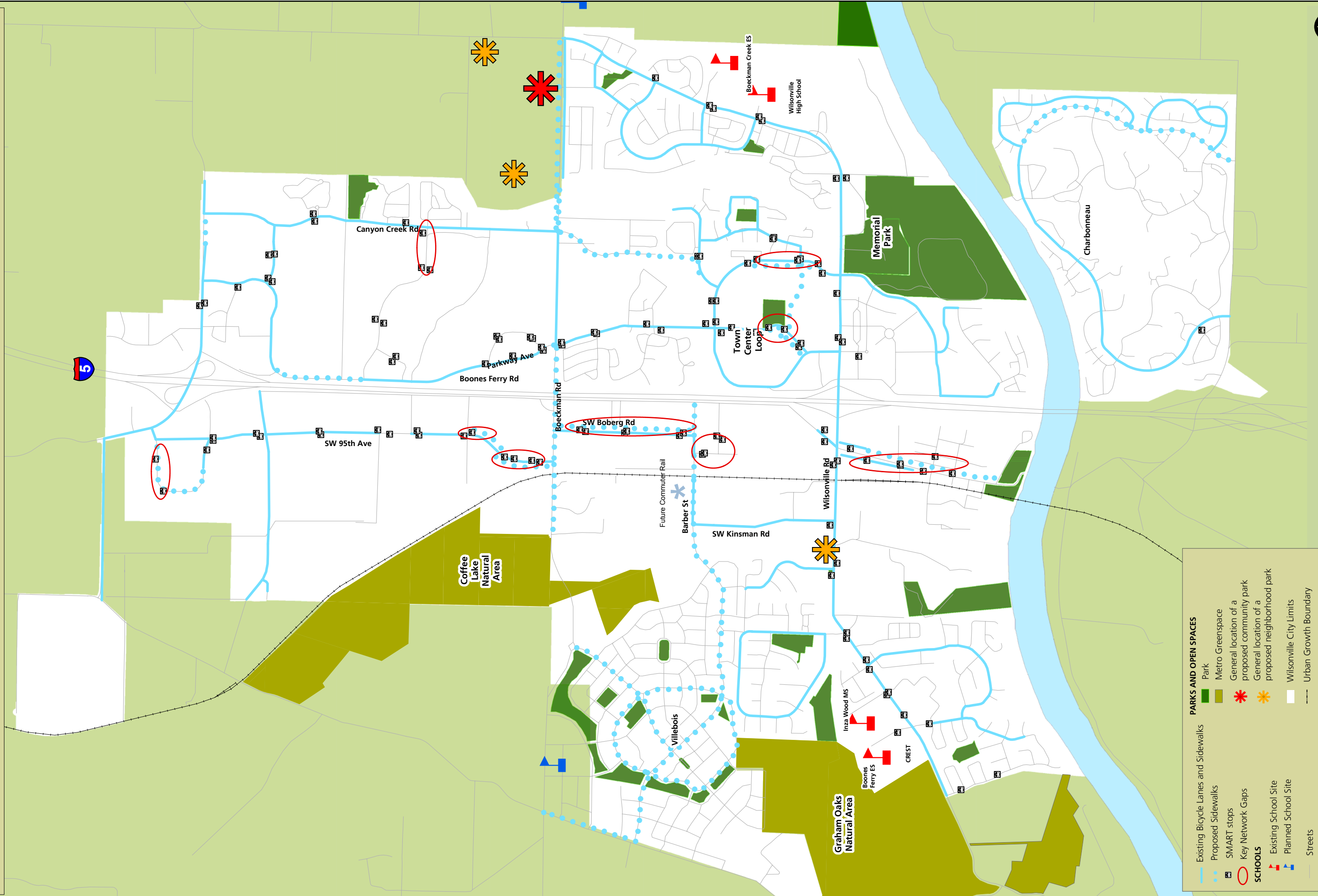
Map 7: Existing Bicycle Lanes



BICYCLE LANES	PARKS AND OPEN SPACES
Existing Bicycle Lanes	Park
Key Network Gaps	Metro Greenspace
Existing School Site	General location of a proposed community park
Planned School Site	General location of a proposed neighborhood park
Streets	Wilsonville City Limits
Railroad	Urban Growth Boundary
	Willamette River



Map 8: Bicycle and Pedestrian Access to SMART



PARKS AND OPEN SPACES

- Park
- Metro Greenspace
- General location of a proposed community park
- General location of a proposed neighborhood park

SCHOOLS

- Existing School Site
- Planned School Site

PARKS AND OPEN SPACES

- Wilsonville City Limits
- Urban Growth Boundary
- Willamette River

EXISTING BICYCLE LANES AND SIDEWALKS

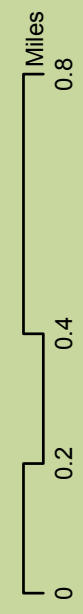
- Existing Bicycle Lanes and Sidewalks
- Proposed Sidewalks

SMART STOPS

- SMART stops
- Key Network Gaps

STREETS

- Streets
- Railroad





6. Key Challenges and Opportunities

Introduction

Crossing I-5

Crossing the Willamette River

Accessing the Willamette River

Improving Bicycle/ Pedestrian Conditions in Town Center

Bicyclist/Pedestrian Access to Transit

Regional Connectivity

Crossing Wilsonville Road

6. Key Challenges and Opportunities

Introduction

Through the public process and technical approach for this Plan, the following key issues emerged:

- Crossing I-5
- Crossing the Willamette River
- Improving Bicycle/Pedestrian Conditions in Town Center
- Pedestrian/Bicyclist Access to Transit
- Regional Connectivity
- Crossing Wilsonville Road

Each issue was consistently identified as a gap or barrier in the bicycle and pedestrian system, preventing residents, employees, and visitors from fully taking advantage of biking and walking around Wilsonville. Below, these issues and their potential solutions are explained.

In examining these six issues, evaluation criteria identified by the members of the ACMP (see discussion on page 82) was applied where possible to arrive at a recommended alternative when multiple options existed. The criteria include: connectivity (25 points), user generator (25 points), land uses (15 points), regional benefits (10 points), and ease of implementation (10 points). Arriving at a recommended alternative was not possible for some of the issues.

Crossing I-5

The presence of I-5 running through Wilsonville creates unique challenges for all users of the roadway system in getting through and around Wilsonville. Just as drivers must select the best route to cross I-5 to reach



Elligsen Road overpass

the west or east side of Wilsonville, so do pedestrians and bicyclists. These crossings—Elligsen Road, Boeckman Road, Wilsonville Road, and Miley Road, are

difficult for bicyclists and pedestrians to use due to traffic volumes, traffic speeds, roadway width, maintenance issues, and lack of appropriate facilities. In addition to the three street crossings, one non-motorized crossing, the Memorial Park/Boones Ferry Park Trail, primarily serves recreational users within the city. Map 9 on page 90 shows the I-5 crossing locations.

Elligsen Road

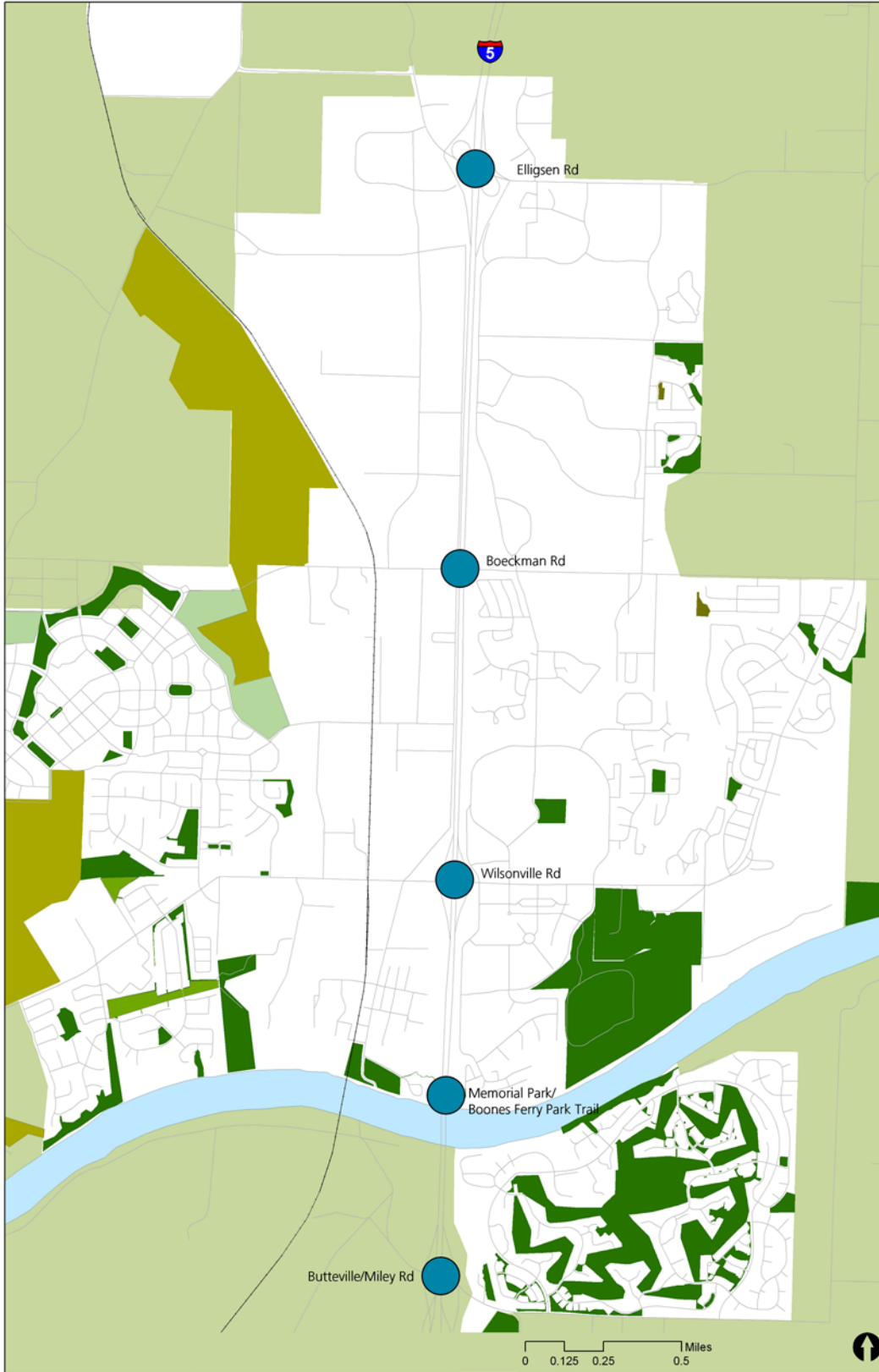
Existing Conditions

Elligsen Road is the northernmost I-5 crossing, and is one of three freeway interchanges in Wilsonville controlled by ODOT. Elligsen Road provides access to Wilsonville to those visitors and residents coming from Sherwood, Tualatin, and Portland. Residents, employees, and visitors to Argyle Square, the Xerox campus, and Mentor Graphics commonly use Elligsen Road to reach their destinations. However, Elligsen Road east of Parkway Center Drive needs pedestrian and bicycle improvements.



Bike lane leading to stop sign and out-of-direction travel

Elligsen Road is a five-lane overpass of I-5 with a posted speed limit of 35 mph. A five-foot wide sidewalk on the south side of the overpass accommodates pedestrians; no sidewalk is provided on the north side. Six-foot wide bicycle lanes are provided on both the north and south sides. The bicycle lane suffers from poor maintenance (see photo above), which is a deterrent to bicycle use. There are multiple conflict points for bicyclists and pedestrians traveling in both directions.



Map 9. I-5 Crossing Locations

6. Key Challenges and Opportunities

Bicycle counts taken at the Boones Ferry Road²/I-5 Southbound ramp between 4:15 and 5:15 pm on September 14, 2004 counted a total of 14 bicyclists, eight heading in the eastbound direction, one southbound, and five westbound. Counts taken at the Boones Ferry Road/I-5 Northbound ramp on the same day between 4:45 and 5:45 pm counted a total of 14 bicyclists, three heading eastbound and 11 heading westbound.

Recommendations

- Coordinate with ODOT to ensure bike lane maintenance to be conducted at regular intervals to provide clean, debris-free bike lanes for users. May require memorandum of understanding (MOU) or intergovernmental agreement (IGA).
- Initiate an "Adopt-a-Trail" program.
- Work with ODOT to re-evaluate the geometry of the bike lane and on-/off-ramp interactions to

2. West of I-5, the Elligsen alignment is named Boones Ferry Road.

improve safety. This might be accomplished by straightening the bicycle lane at the northwest and southeast ramps, so that bicyclists are directed to continue traveling straight and vehicles turning right are required to yield to the through bicycle movement. (Figure 4) Striping a "blue bicycle lane"³ through all of the potential conflict areas should also be evaluated to highlight those areas where both bicyclists and drivers need to have a heightened awareness of all road users. In addition, opportunities to improve signage along the roadway to indicate to motorists that bicyclists will be on the roadway and to expect bicyclists to make through movements across the travel lane should be reviewed.

3. A "blue bicycle lane" is not an official standard in Oregon at this time. "Blue" bicycle lanes continue to be successfully used in the City of Portland. For further information, please see "Portland's Blue Bike Lanes: Improved Safety Through Enhanced Visibility."



Figure 4. Crossing I-5 at Elligsen Road

Boeckman Road

Existing Conditions

Boeckman Road connects neighborhoods, Xerox, Mentor Graphics, and other large employers with west Wilsonville. The posted speed limit along Boeckman Road is 40 mph; however,



Boeckman Road looking west on I-5

it drops to 25 mph at the dip and resumes at 40 mph on the other side. Boeckman Road will be an important connection to Villebois, the Wilsonville Business Parks, and the future Commuter Rail Station.

Boeckman Road is a two-lane overpass with 20-foot-wide travel lanes that narrow back down to 12-foot-wide travel lanes with narrow shoulders on either side of the overpass. There are currently no dedicated bicycle or pedestrian facilities across the bridge. In addition, Boeckman Road has inadequate bicycle and pedestrian facilities leading up to the bridge. This is particularly noticeable where Boeckman Road crosses Boeckman Creek. At this location, Boeckman Road is a narrow, two-lane road with no shoulders or bicycle lanes and poor sightlines due to the natural topography. Bicyclists are allowed by law to operate as a vehicle and share the travel lane with motor vehicles; however, many bicyclists are uncomfortable riding in this manner.

Recommendations

Short-term:

- Re-stripe the overpass section to provide two 6-foot-wide bicycle lanes and two 14-foot-wide travel lanes, or
- Provide two 6-8-foot-wide multi-use paths and 12-14-foot travel lanes, depending on the width of the multi-use path. Additional precautions, such as raising the path slightly, coloring the path, or adding barriers of some sort should be explored.
- Re-stripe the roadway between Boberg Road and the overpass on the west side of the freeway and Parkway Avenue and the overpass on the east side of the freeway to gain additional room to stripe

bicycle lanes, or at least gain additional shoulder width.

- Install a shared-use path along the south side of Boeckman Road from Parkway Avenue to Canyon Creek. A two-way shared-use path running parallel to a roadway is generally not recommended. However, this location is a good candidate for such a path since it has no crossings, and presents an opportunity to provide bicycle and pedestrian facilities where none currently exist.
- Explore with Mentor Graphics the possibility of widening the existing path along Boeckman Road to 10 feet and adding curb cuts.

Long-term:

- Add dedicated bicycle and pedestrian facilities to the Boeckman Road overpass. If the overpass is rebuilt, include sidewalks and bicycle lanes on both sides from Boberg Road to Parkway Avenue. If the overpass is not going to be rebuilt in the next 10 years, identify funding for a bicycle and pedestrian bridge to be cantilevered off the south side of the Boeckman Road overpass.

Wilsonville Road/I-5 Interchange

Existing Conditions

Wilsonville Road, a six-lane underpass of I-5 with a posted speed limit of 25 mph, is the primary freeway interchange located in Wilsonville. There are sidewalks and



bicycle lanes on both sides of the road. Wilsonville Road is a vital east-west road, connecting schools, neighborhoods, shopping centers, parks, and employment centers. The City is currently preparing plans to widen the I-5/Wilsonville Road interchange to handle projected traffic volumes.

Recommendations

- Develop alternatives to road widening projects related to Wilsonville Road to improve the overall bicycling and pedestrian environment.⁴ The ODOT Bicycle and Pedestrian Plan notes, "Motorists

6. Key Challenges and Opportunities

typically drive at a speed they perceive as safe; this is usually related to the road design, especially available width."⁵ Widening Wilsonville Road would encourage motorists to drive at faster speeds, increasing the safety risks for bicyclists and pedestrians, while decreasing the suitability of Wilsonville Road for non-motorized users.

- Provide additional landscaping next to the sidewalk and pedestrian-scale lighting along Wilsonville Road under I-5 to increase the attractiveness and comfort of the pedestrian environment.
- Provide an elevated/raised shared-use path underneath I-5 to provide greater separation between traffic and bicyclists and pedestrians.
- Add blue bicycle lanes through the dotted bike lane section where motor vehicles transition over the bicycle lane to access the freeway on-ramps.

Memorial Park/Boones Ferry Park Trail

The Memorial Park/Boones Ferry Park Trail connects two major parks in the Wilsonville system, as well as the neighborhoods that surround them. The trail is accessed from a dead-end street on either side of the trail with a short on-street connection leading to Memorial Park and Boones Ferry Park.



Trail access from neighborhood

The trail is an eight-foot-wide asphalt path with concrete connections to the existing sidewalk on the east side. Currently, there are Jersey barriers extending onto the path to prevent vehicles from driving underneath the I-5 bridge. The Jersey barriers



Pinch point on trail

create a pinch point, narrowing the usable width of the trail to less than six feet. No lighting or other amenities are provided along the length of the trail. In addition, nearby plants are uprooting and breaking the trail surfacing, and this existing condition, along with poor alignment in places, reduces the accessibility of the trail for many users.

Recommendations

- Widen the trail to 10 feet to meet minimum regional trail standards.
- Add pedestrian-scale lighting, seating, water fountains, and other amenities so that trail users might stop and enjoy the view of the river.
- Replace the Jersey barriers with bollards (see Chapter 7. Design Standards and Guidelines) at the entrance to improve bicycle and pedestrian accessibility to the trail while preventing motor vehicles from accessing the trail.
- Create a connection to the proposed Boone Bridge / Willamette River crossing that is shown on Map 5 on page 47 and described in greater detail in "Crossing the Willamette River" on page 97.
- Change the many right-angle turns to more gentle curves.
- Change the grade of the path underneath the underpass to make it more easily accessible.

Potential New Crossings

There are several potential locations for non-motorized crossings of I-5. Such crossings would connect east and west Wilsonville while providing bicyclists, pedestrians, skaters, and other non-motorized users a safe, comfortable and convenient method of crossing the freeway. If fully implemented, the crossings would form a highly connected bicycle and pedestrian network that could attract new users to the system based on the ease and availability of the crossings. The first two crossings described below would be 12-foot-wide overpasses of I-5, while the third crossing would be an undercrossing of I-5.

Wiedeman Trail Bridge

The Wiedeman Trail crossing (see Figure 5) would connect Canyon Creek Park, the surrounding neighborhoods, Argyle Square, Xerox, and Mentor Graphics with the Wilsonville industrial area. The Wiedeman Trail crossing would be a desirable location since it would provide a safe bicycle- and pedestrian-only alternative just south of the I-5/Elligsen Road

4. This recommendation conflicts with other goals found in the Wilsonville TSP.
5. Oregon Bicycle and Pedestrian Plan, p.160.

interchange. A Wiedeman Trail Crossing would ensure a northern east-west connection between two regional trails, the Tonquin Trail and the Boeckman Creek / Stafford Spur Trails. The trail and crossing would complete a primarily off-road non-motorized loop of Wilsonville, providing numerous recreational and commuter opportunities to visitors and residents of Wilsonville. A safety study would be required to determine the available space and how the bridge would be located in the right-of-way with sufficient separation from the freeway.

Finding the available right-of-way on the west side of Wilsonville to site a bicycle and pedestrian bridge presents a challenge, due to the level of development occurring on the west side of the freeway. Two potential locations on the west side are:

Option A: Directly north of the Tonkin Auto Dealership near the powerline corridor. This would require a longer structure to span both the freeway and Boones Ferry Road and acquisitions with the surrounding

landowners. However, this option provides a direct connection to the existing bicycle and pedestrian infrastructure located on 95th. The option is constrained by the potential use of the creek buffer area for a stormwater facility. The site is identified in the City's Stormwater Master Plan as project CLC-5.

Option B: In the Boones Ferry Road / I-5 right-of-way, which would result in a shorter span and fewer acquisitions with private landowners. Boones Ferry Road, currently a two-lane road with no bike lanes or sidewalks, would require improvements to the bicycle and pedestrian environment so that users of the bridge are able to reach and use the overcrossing safely and comfortably.

On the east side of I-5, the bridge would be located within the street right-of-way of the unbuilt Wiedeman Road extending on Parkway Drive. A trail would continue east, connecting users with Canyon Creek Road, Canyon Creek Park, and the surrounding neighborhoods.

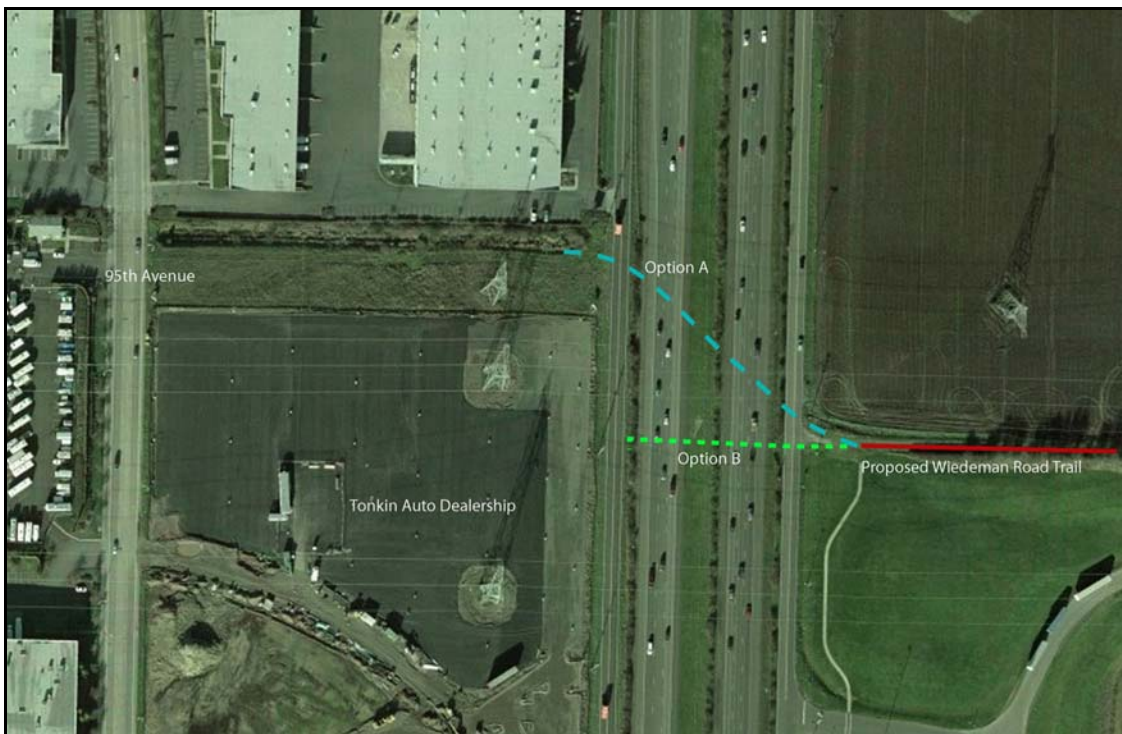


Figure 5. Potential Crossing at Weideman Road

Town Center Bridge

Town Center Loop is a major trip attractor and generator for all modes of travel, since it contains a number and variety of commercial uses. Currently,

bicyclists and pedestrians starting their trip on the west side of Wilsonville must use either Wilsonville Road to connect with Town Center Loop Road, or travel further north and cross over Boeckman Road

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and then use Parkway Avenue heading south to connect with Town Center Loop Road. Both of these routes can be challenging for many bicyclists and pedestrians. A bicycle and pedestrian overpass that connects users directly to Town Center Loop would increase the safety and connectivity of the entire bicycle and pedestrian network, increasing the ease of use and attractiveness of the system as a whole.

Two locations for a Town Center Bridge are (see Figure 6):

Option A. Barber Street overpass. The available space on the west side to install the overpass is constrained and the high level of truck traffic on Boones Ferry Road is likely to increase the necessary bridge clearance and termination area. With the redevelopment of surrounding parcels, more space on the west side may become available. Connections to the neighborhood and possibly to the Family Fun Center would have to be negotiated. The trail could also parallel I-5 for a short while as in Option B.

Option B. Peyton Lane overpass. Peyton Lane runs along the southern edge of the Hollywood Video headquarters, connecting Boones Ferry Road with Barber Street via Casting Street. As with the Wiedeman Trail, the available space on the west side to install the overpass is constrained and the high level of truck traffic on Boones Ferry Road is likely to increase the necessary bridge clearance and termination area. On the east side, the bridge and a short section of trail would utilize ODOT right-of-way, requiring negotiations between the City and ODOT. Depending on the location of the trail and the connection to the sidewalk on Town Center Loop, a small easement may also be required from the private property owner.

Option C. Boones Ferry Road to an existing shared-use path. On the west side of the freeway, the bridge access would be located in ODOT right-of-way just north of the pizza parlor, connecting to the existing bike lanes and sidewalks along Boones Ferry Road. Currently, bicycle and pedestrian facilities are non-existent along Boones Ferry Road, and the connections to west Wilsonville are less than ideal. However, once the Barber Street extension is completed, then bicycle and pedestrian access improves greatly. On the eastside access, the bridge would connect into the multi-use path that runs along a portion of Town

Center Loop West and ultimately into the existing sidewalk network around Town Center Loop.

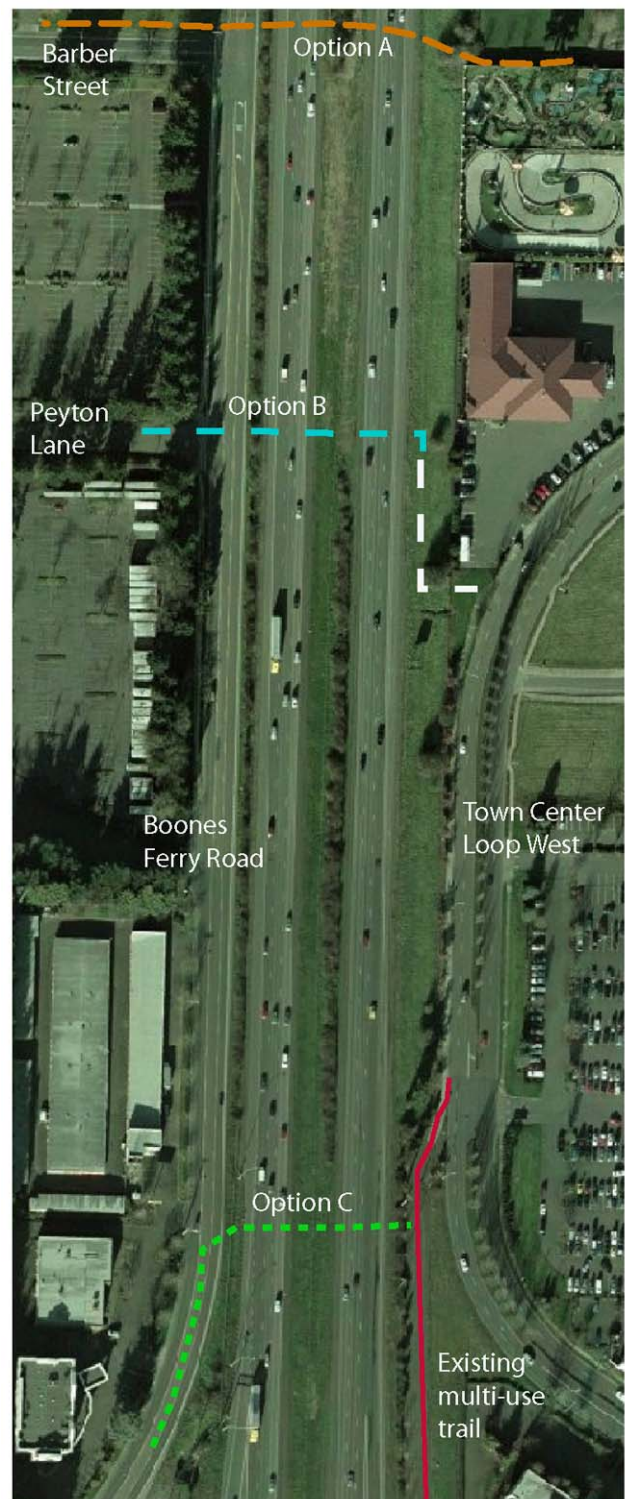


Figure 6. Potential Town Center Crossings

Memorial Drive / 5th Street

Memorial Drive / 5th Street (see Figure 7) would be an overcrossing of I-5 to connect Old Town Wilsonville, Boones Ferry Park, Memorial Park, the proposed Boone Bridge / Willamette River crossing (see "Recommended Bicycle and Pedestrian Network" on page 43), and neighborhoods on both sides of the freeway. Memorial Drive has sidewalks and bicycle lanes on both sides, while 5th Street has no dedicated bicycle or pedestrian facilities east of Boones Ferry Road. However, the current traffic volumes on 5th Street do not indicate the need for bicycle lanes. 5th Street is identified in the TSP as a minor collector, a 2-lane road with a design capacity for 1200-3000 vehicles per day. The Standards

shown in the TSP identify bicycle lanes on minor collectors after traffic volumes reach 1500 vehicles per day.

The connection on the west side would require negotiations with ODOT regarding access and use of their facility located at the end of 5th Street. The connection on the east side would require negotiations with the private landowners along Memorial Drive to locate a secure, sufficient space for the overcrossing. An undercrossing was considered for this location; however, City engineers identified existing utility conflicts.

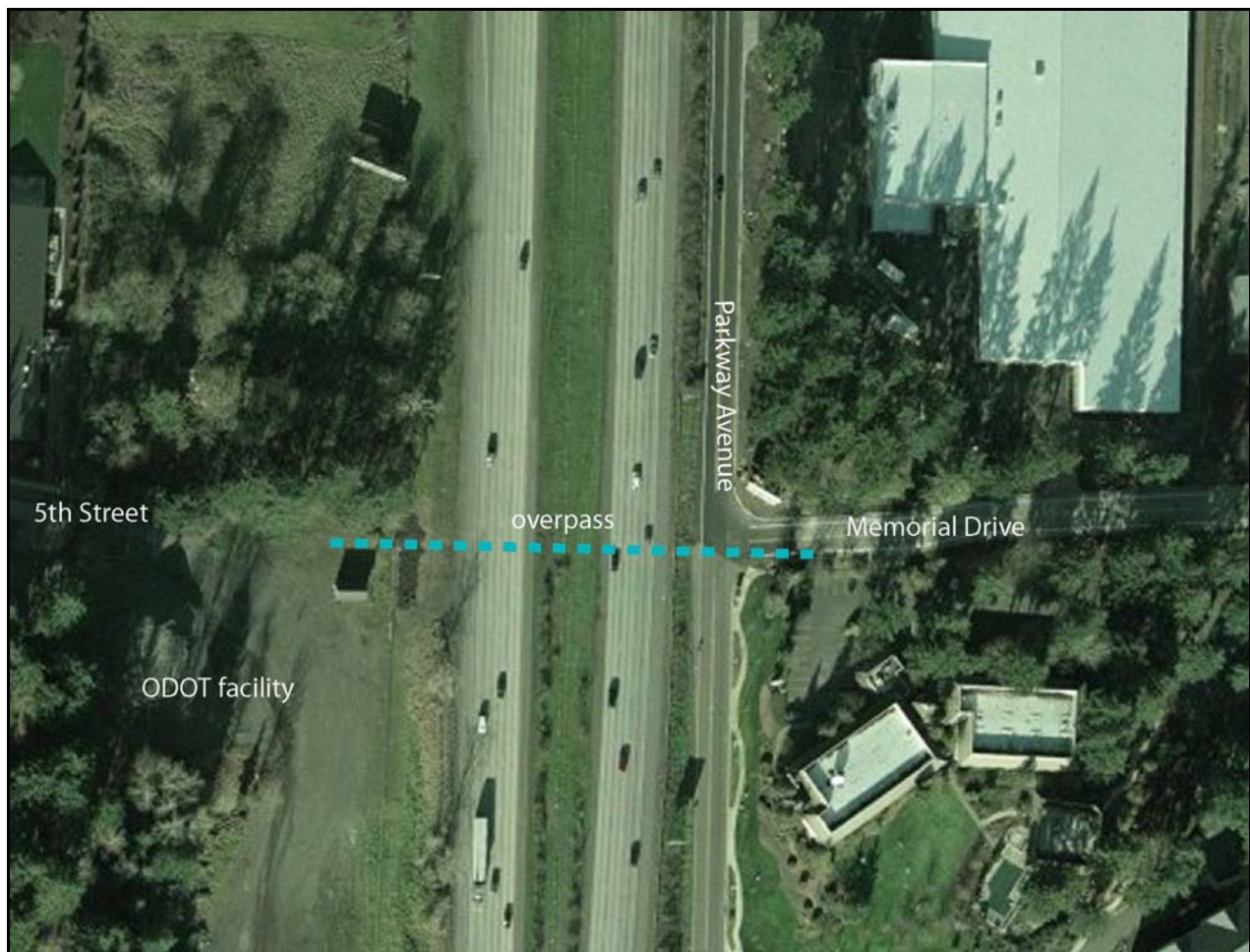


Figure 7. Memorial Drive - 5th Street Crossing

6. Key Challenges and Opportunities

Alternatives Evaluation

Table 10 illustrates the results of the evaluation criteria as applied to the three existing I-5 crossings and the three proposed non-motorized crossings.

Most of the projects scored very similarly on many of the criteria. However, improving the conditions of the Memorial Park/Boones Ferry Trail, improving the Boeckman Road crossing, and establishing a bicycle and pedestrian-only bridge to Town Center stand out as preferred projects.

Table 10. I-5 Crossing Evaluation Matrix

Project	Connectivity	User Generator	Land Uses	Regional Benefits	Ease of Implementation	Totals
Elligsen Road	25	20	15	5	10	75
Boeckman Road	25	25	15	10	5	80
Wilsonville Road	25	20	15	5	10	75
Memorial Park/ Boones Ferry Trail	25	25	15	10	10	85
Weidemann Trail Bridge	25	20	10	10	0	65
Town Center Bridge	25	25	15	15	2	82
Memorial Drive/5th Street	25	20	10	10	0	65

Crossing the Willamette River

Wilsonville's location along the banks of the Willamette River provides plentiful recreation opportunities for visitors and residents alike. While a wonderful natural resource, the river also serves as a significant barrier for bicyclists and pedestrians desiring to cross. The lack of any crossing option other than the Boone Bridge (I-5) greatly reduces the opportunities for people to walk or bicycle to Charbonneau, Champoeg Park, or other destinations south of the river. The alternatives examined for improving the bicycle and pedestrian crossing of the Willamette River are:

- Building a new stand-alone bicyclist/pedestrian bridge
- Adding a bridge to the railroad crossing
- Cantilevering a bridge from the Boone I-5 Bridge
- Adding a shared-use path running underneath the I-5 bridge
- Establishing a pedestrian and bicycle ferry
- Do nothing, continue with existing conditions



Railroad bridge spanning the Willamette River

Engineers examined several options for a bicycle and pedestrian shared-use bridge to be built either on the existing railroad bridge, or added to the existing I-5 bridge.

Creating a New Bicyclist/Pedestrian Bridge

A new bicyclist and pedestrian bridge could be built to span the Willamette River that would be a landmark entry point, drawing on the heritage of Wilsonville as an important location along the river. A separated bicycle and pedestrian bridge would provide safe and convenient passage across the Willamette River and would also serve as a gateway to Wilsonville, the Northern Willamette Valley, and the Mt. Hood region, creating strong regional ties. There are a number of potential locations for siting a new bridge, all with their own benefits and constraints. The major constraint of any separated bicycle pedestrian bridge is ensuring safe and accessible connections on both sides of the river for all users. From west to east, potential locations include:

1. *Tonquin Trail to NE Butteville Road.* Creates a strong link to Champoeg Park and the Willamette Scenic Bikeway while providing direct access to a significant regional north-south multi-use trail, as well as the regional Waterfront Trail. This location is at the far western end of the city limits, so the ties to the City are weaker than other options.
2. *Boones Ferry Park to NE Butteville Road at the marina.* Creates a direct link to Old Town and the historic heart of Wilsonville Road, providing economic development opportunities all along Boones Ferry Road and into the center of Wilsonville. Would also tie into regional trail network through the Waterfront Trail, providing connection for bicyclists and pedestrians to the Water Treatment Plant, Memorial Park, and Town Center Loop.
3. *Boones Ferry Park/Memorial Park path to Charbonneau.* Adjacent to Boone Bridge (I-5), a bridge in this location provides access to Boones Ferry Road and Old Town, as well as Charbonneau. The least desirable location for a bridge from a user standpoint, given the presence of the Boone Bridge and the noise pollution from the cars.
4. *Memorial Park to Charbonneau.* Creates the strongest tie between the two sections of Wilsonville, while providing Charbonneau residents direct access to Memorial Park and just a little further north, the senior center, library and Town Center. Would be the most difficult given the level of development along the river in Charbonneau.



Bicycle/pedestrian suspension bridge in Frankfurt, Germany



Photo rendering of Wilsonville bicycle/pedestrian suspension bridge



Bicycle/pedestrian suspension bridge in Frankfurt, Germany

Adding a Bridge to the Railroad Crossing

Bicyclists and pedestrians could possibly use the existing private railroad bridge that spans the Willamette River just west of the marina through the addition of a shared-use path to the span. This option would depend on negotiations with the railroad—a potentially long, expensive and time-consuming task.

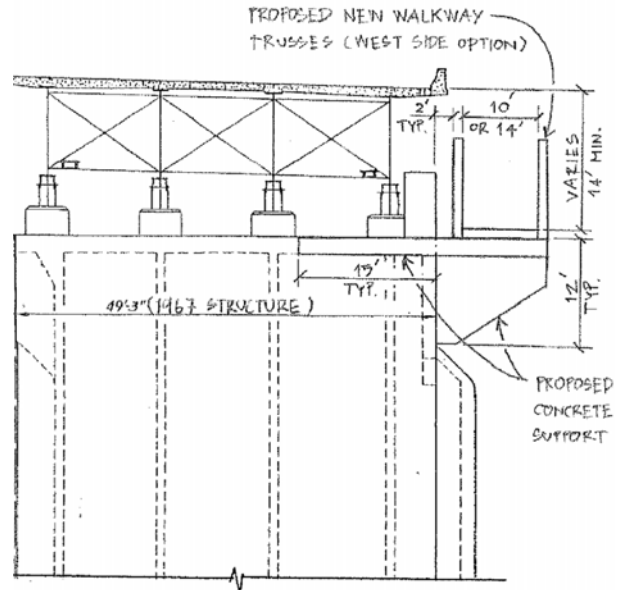


Railroad bridge from Marina

In addition to the installation of the bridge, the success of the bicycle/pedestrian shared use path hinges on creating sufficient connections on either side of the river so that bridge users of all ages and abilities would be able to access the bridge safely and comfortably. Attaching a bridge to the railroad trusses could cost approximately \$4-8 million.

Cantilevering a Bridge from Boone Bridge

Ideally, a bicycle and pedestrian bridge would span the walkway structure between supports that cantilever from the existing bridge piers. This would allow for a continuous uninterrupted structure that feels more open and independent from the existing bridge. The cantilevered bicycle and pedestrian bridge would be located significantly lower than the Boone Bridge decking, creating vertical separation between the path users and the vehicles streaming by on I-5. Safety issues, such as protection from falling debris, will need to be addressed in the design phase of any cantilevered bridge.



Example of a cantilevered bridge

Preliminary analysis indicates that a cantilevered walkway on the west side of the existing I-5 bridge would increase the loading on the bridge by approximately 5%, a relatively small increase in loading. If the bicycle and pedestrian bridge were maintained by ODOT, the bridge would have to be wide and strong enough to accommodate a street sweeper, since that is the general vehicle used by ODOT for maintenance of all their facilities. However, if Wilsonville secured funding for construction, maintenance, and operation, the bridge may not be required to meet such stringent demands. Bridges engineered to accommodate a full load of bicyclists and pedestrians exceed square foot/load design standards for vehicles.

Similar to the railroad bridge, the connections to an I-5 bicycle and pedestrian bridge on both the north and south sides of the Willamette would have to be improved to guarantee access for all non-



West side of I-5 bridge

motorized users. Ramps to access the bridge could be built utilizing the existing grade on both the north and south side of the river. On the north side, the ramp would be accessible both from the Boones Ferry Park /

Memorial Park path running underneath I-5 and from the neighborhoods directly to the west along Boones Ferry Road. On the south side, the ramp could continue as a trail along the existing access road and connect to Miley Road just to the east of the I-5 off-ramp. This would provide the City with an opportunity to increase access to the river and create new parks and open spaces for Wilsonville residents and visitors while improving the safety and cleanliness under both ends of Boone Bridge. A preliminary cost analysis by KPFF Engineering puts the total cost of the bridge at just over \$6 million.

Establishing a Pedestrian/Bicycle Ferry

Successful bike ferries in operation in Vermont and on Martha's Vineyard offer a small, quick moving ferry designed for pedestrian and bike travel. For Wilsonville, such a ferry could be an excellent and relatively low-cost operation. It would likely become an attractor in and of itself and an exciting component of the trail network. Boones Ferry Park and the Marina across the river to the south are possible docking locations. See the Parks and Recreation Master Plan for details about improved river access through Boones Ferry Park.



Potential ferry crossing location

In Vermont, the Winooski River Ferry provided a connection across the Winooski River for users of the Burlington Bike Path and the Colchester Causeway. The ferry operated from 2000-2003. It was replaced by the opening of the Burlington-Colchester Bridge in 2003. Setup costs for the Winooski River Ferry were \$100,000, mostly paid by state-funded grants. Yearly operating costs were \$70,000, with labor as the largest cost.



Winooski River Ferry, Burlington Path

Do Nothing, Continue with Existing Conditions

In this alternative, no changes are made to the existing conditions, and bicyclists and pedestrians continue to legally use the shoulder of the I-5 Boone Bridge to cross the Willamette River.

Alternatives Evaluation

Table 11 illustrates the results of the evaluation criteria as applied to the six alternatives to improve the bicyclist and pedestrian crossing of the Willamette River.

Most of the alternatives scored very similar on many of the criteria; however, building a stand-alone bridge was the preferred alternative.

Table 11. Willamette River Crossing Evaluation Matrix

Alternatives	Connectivity	User Generator	Land Uses	Regional Benefits	Ease of Implementation	Total
Adding a bridge to the railroad crossing	25	20	10	10	2	67
Cantilevering a bridge from I-5	25	25	10	15	5	80
Bridge underneath I-5	25	15	15	10	5	70
New bicycle/pedestrian bridge	25	25	15	15	5	86
Bicycle/pedestrian ferry	20	20	15	15	10	80
Do nothing	10	0	10	0	10	30

Recommendations

After examining the results of the evaluation criteria, the long-term recommendation is for the design and construction of a standalone bicycle and pedestrian bridge. This bridge will fill in a major gap in the Wilsonville system while appealing to all types of users, from bicycle tourists, to more serious recreational riders, to parents with kids out for a leisurely ride. The bicycle/pedestrian bridge would enhance Boones Ferry Park while providing a stronger connection to Old Town Wilsonville, and would also create additional access and a stronger connection to the river.

In the meantime, Wilsonville could explore the possibilities of establishing a bicycle and pedestrian ferry to serve those users who prefer not to cross the Willamette River on the Boone Bridge under its existing conditions. As noted, the most likely locations of the docks would be at Boones Ferry Park on the north side and the marina on the south side, although other locations could be added depending upon demand and funding.

Additionally, the State recently placed an increased emphasis on bicycle tourism, highlighted by the dedication of the Willamette Valley Scenic Bikeway that stretches from Armitage County Park just north of Eugene to Champoeg State Park, part of the longer Oregon Scenic Bikeway. In addition, Oregon Cycling is the first chapter in the Book of Oregon Oregon on www.traveloregon.com, the state's tourism website. Wilsonville is well positioned to capitalize on its proximity to the Scenic Bikeway and Wilsonville's connections to other regional destinations. The establishment of a bicycle and pedestrian route across the Willamette River would only serve to highlight the City's accessibility and bicycle-friendly environment.

Accessing the Willamette River

Current east-west travel routes in Wilsonville provide little opportunities for people to know that they are traveling along a river corridor. Businesses and residential developments are situated in such a way that blocks visual and physical access to the river. Creating stronger links to and along the Willamette River provides a great opportunity for enhancing a wonderful natural resource while reconnecting Wilsonville residents with the Willamette. Existing access locations include Memorial Park and Boones Ferry Park, while additional access points might be feasible at Meridian Landing, the Water Treatment Plant, and Metro property. Additional river access opportunities might come out of a river crossing discussed previously.



River access from Memorial Park

Water Trail System Vision

Current east-west travel routes in Wilsonville provide few opportunities for people to know they are traveling along a river corridor. Businesses and residential developments are situated in such a way that blocks visual and physical access to the river. Creating stronger links to and along the Willamette River provides a great opportunity for enhancing a wonderful natural resource while reconnecting Wilsonville residents with the Willamette. Wilsonville can create a water trail system by enhancing existing river access locations while embracing opportunities to create new river access points. The sites identified as the best opportunities for improving access to the river and creating a water trail system are noted below and in Figure 8:

- Metro Open Space south of Wilsonville Road/ Graham Oaks Natural Area (additional land would need to be acquired to make a physical river connection)
- Water Treatment Plant
- Boones Ferry Park and Landing
- Memorial Park
- Meridian Landing State Park

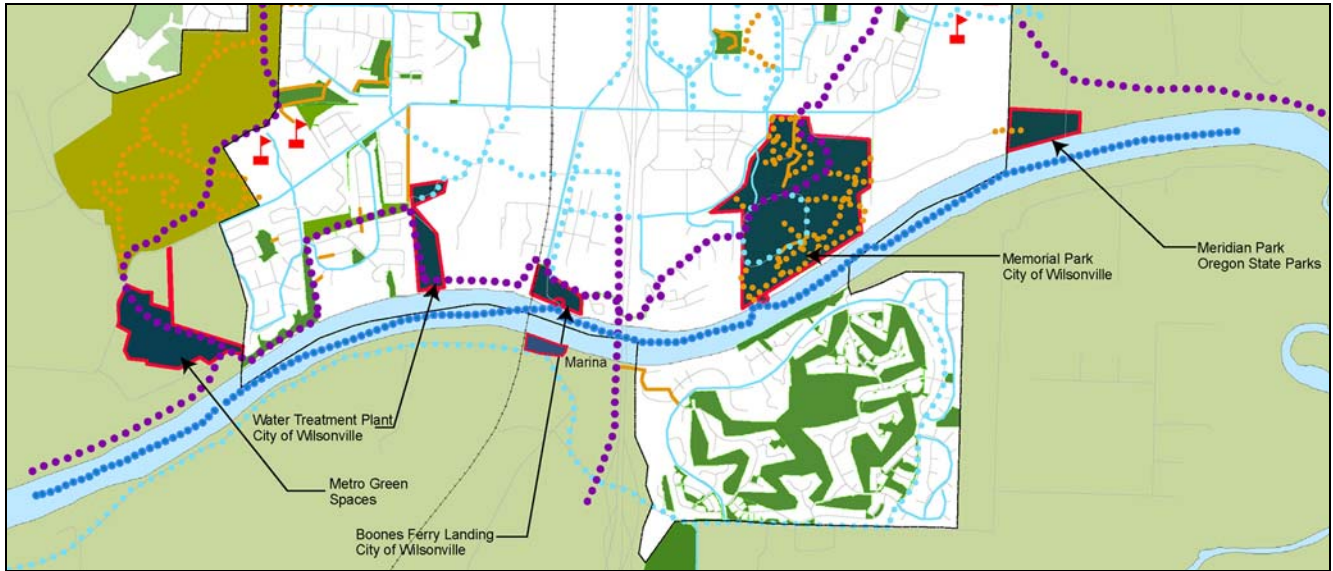


Figure 8. Potential Water Trail Site Locations

A Water Trail Plan

A water trail is a stretch of river, a shoreline, or an ocean that has been mapped out with the intent to create an educational, scenic, and challenging experience for recreational canoeing and kayaking.

Throughout history, water trails have been an important way to move people and goods along waterways. Today a revival of water trails is being driven by increasing demand for water based recreational and educational opportunities.

Planning a water trail requires maintaining a careful balance between protecting the resource and responding to the needs of landowners and water trail users. Most importantly, water trail planning requires a coordinated vision between the community, affected jurisdictions, and agency representatives.

A water trail plan connects water and land based trail systems, ultimately forming a network of transportation, recreation, interpretive/education and resource conservation/restoration opportunities. By providing these connections, the water trail becomes a value-added recreation and natural resource experience that will be rooted in the community for years to come.

Water Trail Planning in Wilsonville

According to the Oregon State Parks Water Trails Report, user groups stated that there is a need to

improve existing infrastructure and add new infrastructure to support a growing demand for paddle sports. Interest and demand for better access to the river also came out during the public process for the Bicycle and Pedestrian/Parks/Transit master planning process. Recreational resources, facilities and services needed to support the development of water trails include: water access sites and support facilities, overnight camping facilities, restrooms, directional signage, maps, brochures and other resources to support the marketing and education of water trail systems across the state.

Governors Initiative Willamette River Water Trail

The Wilsonville Water Trail is part of the Willamette River Water Trail that was created in response to community interests for increased water recreation opportunities and improved access to the river. The Wilsonville section of the Willamette River Water Trail is identified as part of the northern section of the trail. The water trail system is outlined in the "Governor's Willamette River Legacy Program." The Governor's initiative focuses on three driving themes, "Repair, Restore, and Recreate" (http://governor.oregon.gov/Gov/p2005/press_060405.shtml).

Under the opus of the Willamette River Legacy Program, the Governor has allocated resources to support the water trail effort. This includes assistance from Oregon Parks and Recreation Department, Oregon Marine Board, and the Oregon Tourism

6. Key Challenges and Opportunities

Commission. The Bureau of Land Management's American Heritage River Initiative and the National Park Service's Rivers, Trails and Conservation Assistance program have provided planning assistance while private funding and support has been provided by GI Joe's, Columbia Sportswear Company and Tom's of Maine.

Regional Context

Wilsonville is well positioned to take advantage of its regional location as the "Gateway" to the Metro Area (see Figure 9) to serve as a major water trail

destination and stop over point. Situated between two major state parks - Champoeg and Molalla - Wilsonville is a logical refueling point for one - and multi-day float trips down the Willamette River. Currently, both Champoeg and Molalla provide entry and exit opportunities for water trail users. Day use facilities are available at both locations, and Champoeg also has yurts, cabins, and three group tent areas for rent to provide overnight accommodations for water trail users.

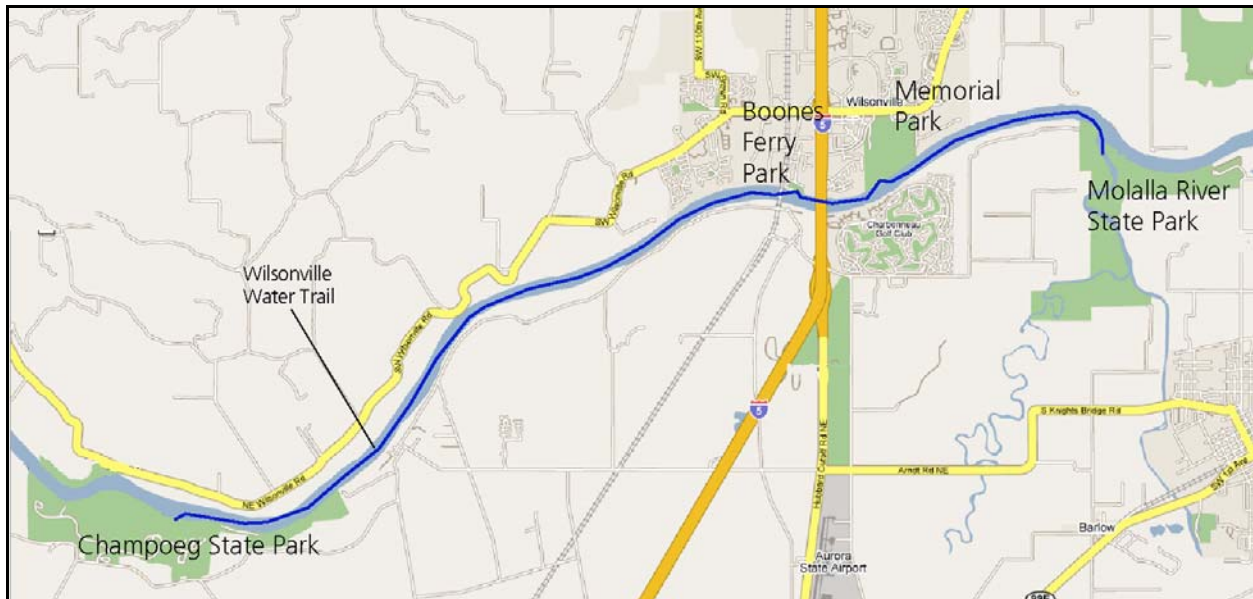


Figure 9. Water Trail Regional Context

Landscape Description

Primary Ecosystems of the Willamette River Basin

The varied landscape conditions within the Willamette River Basin create a mosaic of diverse ecosystems, where specific climate and geologic characteristics determine the area's collection of native species. Wilsonville is part of the three primary ecosystems: the gallery forest, prairie terrace and aquatic ecosystems.

1. The Willamette River Gallery Forest occupies the Willamette River floodplain. This system contains deep, fertile silt clay soils and supports riparian forest of cottonwood, alder, Oregon ash, big leaf maple and Douglas fir. A gallery forest is a narrow band of forest along a river in an area of otherwise open country.
2. The Prairie Terrace ecosystem covers the remainder of the wide valley floor and lies on relatively flat fluvial terraces (deposits moved there

by flowing water). It supports Oregon white oak, Oregon ash and Douglas fir. Historically, wet and dry prairie vegetation, as well as savanna grasslands with scattered trees.

3. Aquatic ecosystem: Over 60 species of fish live in the Willamette River basin of which 31 are native and 29 are introduced. Of the native fish, five are listed by either federal or state government as threatened, endangered, or sensitive. These species include, River Chinook salmon from the upper Willamette, Columbia River Chum Salmon, upper Willamette River steelhead trout, the Lower Columbia River/ Southwest Washington Coho and the Willamette cutthroat trout.

Wilsonville Water Trail Sites

Boones Ferry Landing

In 1846, Alphonso Boone immigrated to Oregon via the Applegate Trail with his large family. By 1847, using local Tuality Indians as oarsmen, the family had established Boone's Ferry. The thriving community of Boone's Landing, genesis of Wilsonville, quickly sprang up on the Willamette River's north shore.



River view from Boones Ferry Landing

For 107 years, ferries crossed the Willamette River carrying thousands of horses, cows, buggies, automobiles, and pedestrians. Jesse Boone operated the ferry until his death in 1872. The State of Oregon assumed control of the ferry during the early 1900's, and by the 1950's, a cable-drawn vessel carried up to 12 cars per crossing. Boone's Ferry was decommissioned in 1954, shortly after completion of the Boone Bridge.



Interpretive sign at Boones Ferry Park

A steep paved access road leads to the rivers edge where the concrete foundation of the historic ferry landing can be viewed. The site is tied to a formal park while the current path leading to the river is unpaved and does not meet ADA access standards. Opportunities exist to develop facilities that foster safe entry to the river for non-motorized watercraft. While formalizing the entry experience and connection to the river, there is an opportunity to develop a park and river access facility that celebrates the historic uses of the river. In addition, there is excellent opportunity for economic development related to non-motorized

recreation near the park and in old town along Boones Ferry Road.

Memorial Park

Memorial Park currently serves as a primary recreation and natural area resource for Wilsonville residents and visitors alike by connecting the river, park, schools and neighborhoods from Wilsonville to the Willamette River.



River shelter and picnic facility near path to boat dock.

Memorial Park has ball fields, picnic facilities, restrooms, a skate park, and natural areas. The site offers interpretive riparian restoration opportunities along with connections to existing dock facilities. This site offers safe access and entry to the Willamette.

The site currently has a dock appropriate for motorized watercraft, with docking on a first come first served basis and overnight stops allowed. The existing dock does not serve non-motorized boats very well; however, it could be retrofitted to serve kayaks and canoes.

This site is a primary water trail access and take out location. Parking is a benefit to users that are participating in multi-day river excursions, and there is adequate space to stage equipment. Handcarts could be provided to assist with hauling the boats and equipment to the river.

Improving Bicycle/ Pedestrian Conditions in Town Center

Wilsonville Town Center is home to numerous destinations, including the Regal Cinemas, Fry's Electronics, Thriftway, the Community Center, City Hall, and many restaurants and specialty shops. This vibrant commercial center is also closely connected to the SMART transit system. A 15-foot-wide multi-use path connecting several of the buildings provides good internal circulation for a portion of Town Center. However, the path does not continue through all of Town Center. Additionally, the lack of sidewalks and connections from Town Center Loop decreases pedestrian connectivity. A more bicycle- and pedestrian-friendly environment would benefit all visitors to Town Center.



Lack of pedestrian connections

Existing Conditions

The multi-use path along the outer loop western edge accommodates bicyclists, but is difficult to access, and leads to a sidewalk that is too narrow to handle both bicyclists and pedestrians. Town Center Loop Road does not currently have any bicycle facilities. In addition, bicyclists sometimes ride the wrong way in the bike lane along Wilsonville Road due to inadequate signage at the junction of Wilsonville Road and the shared-use path, and a lack of understanding about the inherent dangers of their behavior.

Pedestrians have decent access around the perimeter of Town Center Loop. The internal connectivity of Town Center Loop allows pedestrians to reach some of their desired destinations; however, certain sections need improvement to provide safer and more direct access.

Opportunities

There are a number of opportunities to improve the bicycling and pedestrian environment in and around Town Center Loop. Opportunities include:

- Providing additional access from Wilsonville Road where feasible
- Widening the sidewalks where feasible
- Increasing internal pedestrian connections
- Investigating the addition of bike lanes to Town Center Loop
- Creating an internal multi-modal path around the Loop
- Adding a shared lane marking to Town Center Loop
- Grinding curb cuts to allow bicycles to enter driveways safely

Map 10 on page 107 identifies the existing conditions described, as well as opportunities for improving the bicycling and pedestrian environment as described above. It is important to note that some of the projects highlighted below will require the cooperation of private parties in order to fully implement them.

The following section outlines the specific projects highlighted on the map. Some of these projects will be completed during the design and construction of the new City Hall to be located just north of the Rite-Aid.

Town Center Loop Projects



A. Create a pedestrian connection from Wilsonville Road to the Town Center Loop path on the west side of Rebekah Street.



B. Complete the sidewalk on the west side of Town Center Loop West near the shared-use path.



C. Improve the intersection at Parkway Court and Town Center parking lot to increase bicyclist and pedestrian safety.



D. Complete the sidewalk on the west side of Town Center Loop East.



E. Improve accessibility and connectivity to City Hall, the Library, Civic Park, Memorial Park, and Town Center for seniors and visitors from Wilsonville Road.



F. Increase accessibility of Town Center Loop sidewalks by retrofitting all sidewalks with curb ramps that are currently lacking them.



G. Create a shared-use path from the northern loop to Town Center Park.



H. Create an off-street multi-use path to connect the civic uses - Town Center Park, future City Hall, the Post Office, and Clackamas Community College - within Town Center Loop.



I. Accent the sidewalk at driveways through the addition of colored, textured pavement to highlight the presence of pedestrians in and around the Loop.

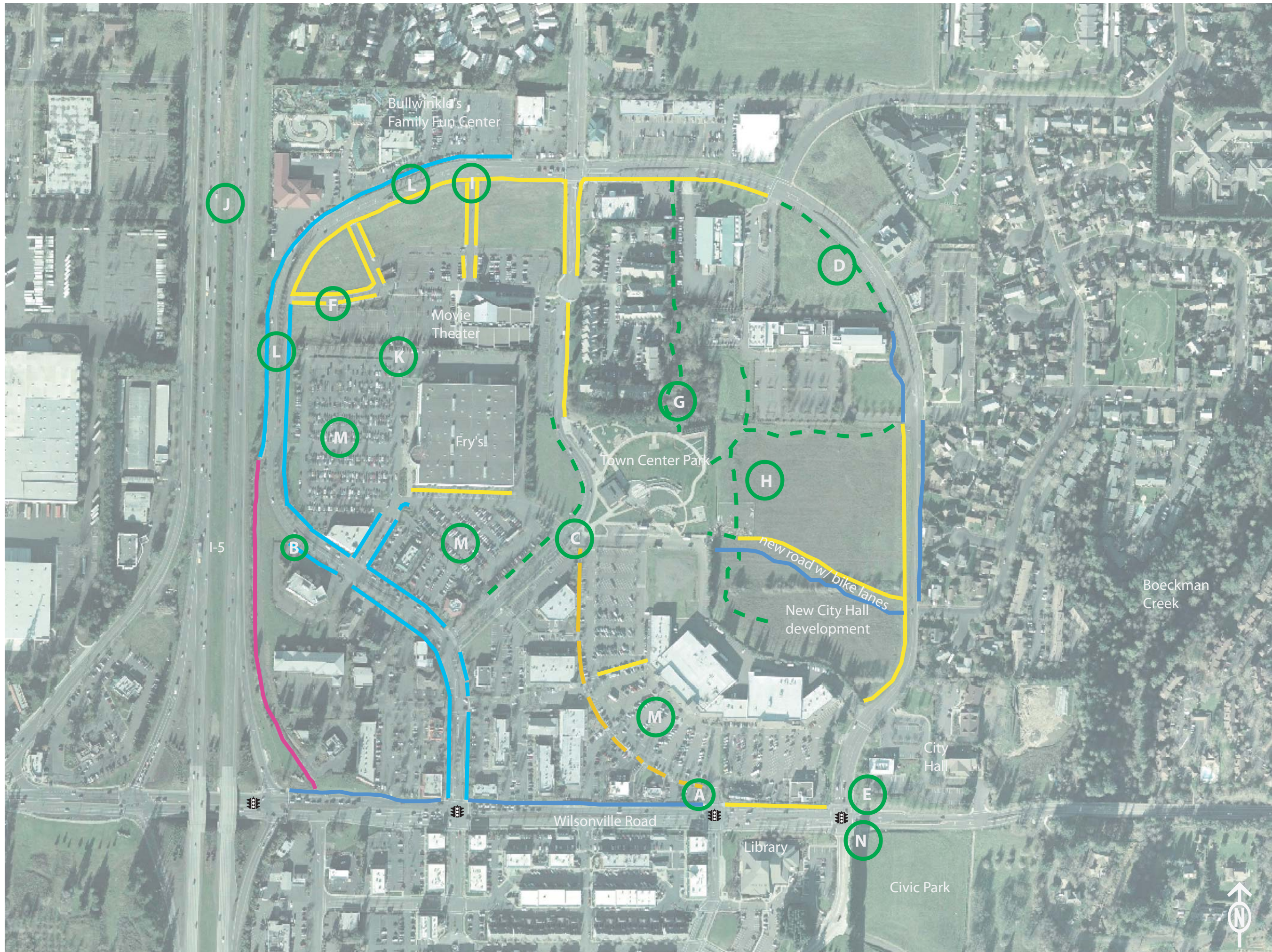


J. Increase connectivity to Town Center Loop by providing a bicycle and pedestrian only bridge spanning I-5.

K. A pedestrian connection between the movie theater and Fry's electronics.

L. Provide additional crossing opportunities where feasible, particularly in locations where bicyclists and pedestrians may be expected. Potential locations include near the shared-use path and connecting such attractors as Bullwinkle's and the movie theater.

M. Investigate the opportunity to narrow the travel lane through the parking areas. This would provide sufficient space to incorporate pedestrian walkways between facing parked cars, similar to the existing walkway leading to Lamb's.



Existing

- 7 ft wide sidewalk
- 8 ft wide sidewalk
- 10 ft wide sidewalk
- 15 ft path
- Multi-use path
- Traffic Signal

Opportunities

- 15 ft wide path
- 10 ft wide path
- C Projects

600 300 0 600 Feet

↑
N

6. Key Challenges and Opportunities

Projects Evaluation

Table 12 illustrates the results of the evaluation criteria as applied to the opportunities to improve the bicyclist and pedestrian environment in Town Center Loop.

As Table 12 demonstrates, most of the projects scored similarly on many of the criteria. However, there are several projects, notably a non-motorized bridge over I-5 and several of the multi-use paths, that stand out as preferred projects.

Recommendations

Some of the identified projects, such as completing the sidewalk on the west side of Town Center Loop East, will be partially completed during the construction of

the new City Hall. At the same time, a multi-use path (Project G) could be constructed, improving connectivity and connecting the civic uses found within Town Center Loop. Project H, followed by Project E, ranked as the most desirable projects in Table 12. Project J ranked third, although it will certainly be the most expensive. The City has money dedicated to Town Center Loop improvements, and a number of the other high-ranking projects: extending the sidewalk on Rebekah Street (Project A), providing a path from the Community Center to Wilsonville Road (Project E), and completing the sidewalk on the west side of Town Center Loop. These could be funded based on preliminary planning-level cost estimates.

Table 12. Town Center Loop Project Evaluation Matrix

ID	Project	Connectivity	User Generator	Land Uses	Regional Benefits	Ease of Implementation	Totals
A	Pedestrian connection from Wilsonville Rd to Town Center Loop path	25	20	15	0	10	70
B	Complete sidewalk on W. side of Town Center Loop W.	25	20	10	0	10	65
C	Improve intersections at Parkway Court & Town Center parking lot	20	15	15	0	6	56
D	Complete sidewalk on W. side of Town Center Loop E.	25	20	15	0	10	70
E	Improve accessibility & connectivity to civic uses	25	25	15	5	8	78
F	Increase accessibility of Town Center Loop sidewalks	25	15	10	0	8	58
G	Create shared-use path from northern loop to Town Center Park	25	20	15	5	5	70
H	Create off-street shared-use path to connect civic uses	25	25	15	5	10	80
I	Accent sidewalk at driveways	10	15	15	0	10	50
J	Provide bicycle/pedestrian only bridge spanning I-5	25	20	15	5	0	70
K	Pedestrian connection	25	20	10	0	5	60
L	Provide additional crossing opportunities	25	20	15	0	5	65
M	Narrow the travel lane	20	10	10	0	5	45
N	Narrow the crosswalk	20	15	15	0	8	58

Bicyclist/Pedestrian Access to Transit

Wilsonville's high-quality South Metro Area Rapid Transit (SMART) system and the planned Washington County Commuter Rail provide great opportunities for increasing pedestrian/bicyclist



Transit stop with no pedestrian connections

transit partnerships in Wilsonville and throughout SMART's service area. Improvements to the pedestrian environment around transit stops increase pedestrian safety, comfort, and may lead to increased transit ridership, since most transit riders start and end transit trips as pedestrians. Integrating bicycles with transit allows the bicyclist to overcome barriers such as hills or weather, encouraging people to undertake longer trips by bike.

In Europe, Japan, and China, the bicycle-transit link serves millions of individuals. In the US, bike access to transit is usually not practical because of lack of bikeways to stations, lack of secure bike parking, and the prohibition of bikes onboard buses or trains.

Opportunity

Integrating bicycles with transit allows the bicyclist to overcome barriers such as:

- Hills
- Distance
- Fears
- Night riding
- Inclement weather
- Breakdowns

Safe and convenient pedestrian connections to transit are of paramount importance to both the walking environment and transit usage. To improve the pedestrian/bicycle transit link, Wilsonville needs to:

- provide good sidewalks and bikeways to transit stops/stations;
- provide benches, shelters, and other amenities at transit stops;
- provide secure bike parking at stations; and
- ensure that bikes are always allowed on transit.

Fortunately, all these barriers can be and are being overcome.

Provide Good Sidewalks and Bikeways to Transit Stops/Stations

Improvements to the pedestrian environment around transit stops increase pedestrian safety, comfort, and may lead to increased transit ridership since most transit trips include a pedestrian trip at one or both ends. In Wilsonville, the majority of the SMART stops have excellent pedestrian access, as shown on Map 8 on page 85, with continuous sidewalks on both sides of the street. However, there are several stops that lack an adjacent sidewalk, decreasing accessibility for all users, especially during the winter months when inclement weather is expected.

The bikeway network in Wilsonville should also provide good access to transit for bicyclists. Many of the current stops are already located near the bikeway network, as shown on Map 8, as is the identified location of the future Washington County Commuter Rail station.



Bicycles on transit allow bicyclists to cover great distances quickly.



Bicycle lockers in Germany

6. Key Challenges and Opportunities

Provide Secure Bike Parking

- Lockers - monthly and/or day use lockers to ensure bicycle safety.
- Other types of well located, high security racks.
- Attended racks, such as a bike depot or station (discussed further below).

BikeStation™

BikeStations are public/private community support facilities designed to encourage bicycling and transit use by providing:

- Secure, valet bicycle parking
- Transit amenities and services
- Close connections to transit

Additionally, BikeStations may provide other amenities, such as:

- Bicycle accessory retail sales
- Bicycle rentals
- Restroom/changing room
- Electric bicycles
- Safety/education information

A more unique feature that a BikeStation may provide is access to Public Use Bicycles (PUBs). PUBs have been around since 1968, when the first "free bike" program was established in The Netherlands. Since that time, PUB providers have worked to improve the bicycling experience while reducing the rate of theft. Now in their third generation, many PUBs utilize "smartcard" technology to check out bicycles and ensure they are returned. Potential locations for a BikeStation include Town Center Loop, future City Hall, or the planned commuter rail station. Imagine PUB hubs located around Wilsonville, so that a bike



European Bike Depot



San Jose, CA BikeStation

could be checked out at the commuter rail station and dropped at Town Center.

Allow Bikes on Transit

Dozens of American cities currently allow bikes on trains and buses in some form. In Wilsonville, 100% of the SMART fleet is equipped with bike racks on the front. Furthermore, bicycles are allowed in the vehicle based on available space. This allows bicyclists to travel as far north as Portland or as far south as Salem on SMART with their bikes, providing a safe and comfortable journey. Ensuring that this policy is maintained and continued with the Washington County commuter rail is vital to maintaining and strengthening the bicycle/transit link.



Bike holding area on a commuter train

Recommendations

- Complete the sidewalk network on both sides of the roadway for all transit routes to ensure connectivity and accessibility for all users. This can be accomplished as new development or redevelopment occurs, or as part of a Sidewalk Infill program.
- Increase the number of SMART stops with benches, shelters, schedules, and other amenities to encourage transit use.
- Advertise that bicycles are allowed on SMART.

Regional Connectivity

Due to Wilsonville's location just north of the fertile Willamette Valley and just south of Portland, large employers including Xerox, Mentor Graphics, Nike, and Hollywood Entertainment all have more employees commuting from other parts of



Strengthen regional connections

the region. Wilsonville is perfectly located to capitalize on a number of potential regional bicycle connections. As part of the process for this plan, consultant staff met with a group of Xerox employees who bicycle to work. They and other residents expressed that regional connections to Newberg, Tualatin, Sherwood, the Willamette Scenic River Bikeway, Dundee, Lake Oswego, Canby, and Portland would serve residents, bike tourists, and employers/employees alike. However, regional bicycle access to Wilsonville is constrained by a number of factors, including natural barriers such as the Willamette River (see "Crossing the Willamette River" on page 97), narrow, high-volume roads leading into Wilsonville, and the topography of the surrounding land.

Much of the discussion regarding improvements to regional access will require multi-jurisdictional cooperation between Wilsonville and the neighboring cities and counties working together towards a successful regional bicycle network. The following discussion highlights the opportunities and challenges for increasing regional connectivity.

Opportunities and Challenges

Northern Access

Members of the ACMP, residents, and employees of local businesses expressed a strong desire for safe and accessible bicycle routes connecting Wilsonville with nearby destinations to the north. These destinations include Tualatin, Sherwood, Lake Oswego, and Portland. Routes that were highlighted as being in need of improvement include:

- Gage Road
- Boones Ferry Road
- Grahams Ferry Road
- 65th Avenue
- Stafford Road
- Clutter Road
- Tonquin Road

All of these routes have one or more of the following conditions that make it difficult for safe riding: no bike lanes or striped shoulder, higher traffic volumes (especially gravel trucks), higher traffic speeds, poor visibility, and difficult terrain.

The challenge with several of these routes is that there is very little right-of-way available for constructing a shoulder, bike lane, or separated path alongside the

existing roadway. Additionally, a number of these segments cross through several jurisdictions, requiring cooperation between Wilsonville and those jurisdictions.

Southern Access

Southern regional access—to Salem, Charbonneau, Champoeg Park, and other regional destinations—is constrained by the lack of a safe and pleasant river crossing that is designed for all users. Currently, bicyclists use the shoulder on the Boone Bridge, exiting at Charbonneau. However, many cyclists indicated that whenever they wish to ride south around the Willamette Valley, they drive across the river to start their bicycle trip rather than ride across on the shoulder of the freeway. The alternatives for improving the bicycle and pedestrian crossing of the Willamette River were presented earlier.

Western Access

To the west of Wilsonville lie Newberg and Dundee in the heart of beautiful Yamhill County wine country. Wilsonville Road heads west along the river and connects with Highway 219, leading directly into downtown Newberg. Within the city limits, Wilsonville Road is a two- to five-lane road with striped bike lanes and sidewalks. However, once west of Willamette Way West, the road quickly narrows to a two-lane road with no bike lanes and very little shoulder. At the same time, the speed limit transitions from a 20 mph school zone to 35 mph and then to 45 mph leaving the city limits. The most desirable roadway treatment would be to widen the shoulders in both directions to provide a safer and more comfortable riding area for bicyclists. This would require cooperation between the City of Wilsonville, Clackamas County, Yamhill County, and Newberg.

Eastern Access

To reach Canby and the Canby Ferry, bicyclists head east out of Wilsonville on Advance Road, which quickly becomes a narrow, two-lane, hilly, rural road with little or no shoulder to accommodate bicyclists. At the same time, as Advance Road leaves the city limits, the posted speed limit increases to 40 mph.

Recommendations

The most desirable solution is to provide safe and comfortable bicycle facilities along the major roadways connecting Wilsonville with the surrounding regional destinations. The roads include: Boones Ferry,

6. Key Challenges and Opportunities

Grahams Ferry, 65th, Stafford, Wilsonville, Advance, and Gage. In some cases, this may be the establishment of a separated regional multi-use path, such as the Tonquin Trail connecting Villebois and west Wilsonville with Tualatin and Sherwood, or the Stafford Spur Trail, connecting east Wilsonville with the proposed Stafford Trail in Lake Oswego.

In other situations, such as the connections to the east and west, Wilsonville will need to work with the surrounding jurisdictions to ensure that the needs of bicyclists and pedestrians are adequately considered and addressed during road maintenance and reconstruction projects.

Increased signage and designation of certain roads as official bike routes, such as Wilsonville Road to Newberg and Advance Road towards Canby, would highlight the roadway as an important route for bicyclists as well as increase motorist awareness of cyclists on the roadway.

Crossing Wilsonville Road

Wilsonville Road is the primary east-west route for residents and visitors, connecting neighborhoods, schools, parks, the library, City Hall, and Town Center Loop, resulting in high traffic



Railroad tracks crossing Wilsonville Road

volumes at most times throughout the day. As a primary route for residents and visitors alike, ensuring a sufficient number of safe and accessible bicycle and pedestrian crossings, particularly near desirable destinations, is vital to maintaining and enhancing the bicycle and pedestrian network in Wilsonville.

Existing Conditions

The segment of Wilsonville Road located within the city limits is approximately 3.6 miles long. There are 12 fully signalized intersections on Wilsonville Road, at the following locations:

- Meadows Parkway (Boeckman Creek Elementary)
- Meadows Loop (Wilsonville High)

- Town Center Loop East
- Rebekah Street
- Town Center Loop West
- I-5 interchange - east side of freeway
- I-5 interchange - west side of freeway
- Boones Ferry Road
- Kinsman Road
- Montebello Drive
- Brown Road
- Willamette Way East (CREST, Boones Ferry Primary)

In addition, there are three pedestrian activated signals at the intersections of Wilsonville Road and the entrance to Inza Wood Middle School, Wilsonville Road and Landover Drive, and from the Senior Center to Murase Plaza. All of the signalized intersections have marked crosswalks. There is one unsignalized, marked crosswalk on Wilsonville Road, located at Meadows Loop (only on the southern-most leg).

Through most of the city, Wilsonville Road is a two-lane road with 12-foot-wide lanes, 14-foot-wide left turn pockets, and a posted speed limit of 35 mph. There are also six-foot-wide bike lanes the entire length of Wilsonville Road within the city limits. From the intersection of Wilsonville Road and Town Center Loop Road East to the intersection of Wilsonville Road and Kinsman Road, the road widens to two lanes in either direction plus a turn lane, and the speed limit drops to 25 mph.

With the current number of signalized intersections and marked crosswalks, there is a protected crossing of Wilsonville Road every 0.3 miles (~1500 feet) on average. The density of crossings increases in relationship to the development and potential destinations surrounding Wilsonville Road. Near Inza Wood Primary School and Boones Ferry Primary School, three of the four crossings of Wilsonville Road within ~ 0.40 miles have protected pedestrian crossings. Near Town Center Loop, there are four signalized crossings of Wilsonville Road within a similar 0.40-mile stretch.

However, with the crossings of Wilsonville Road consolidated around the existing attractors and generators, there are several potential locations that might benefit from a marked pedestrian crossing in the future. Two locations, Rose Lane and the railroad tracks, are highlighted in the next section.

Rose Lane

Existing Conditions

Rose Lane is an important connection between the residential areas to the north of Wilsonville Road and to Memorial Park to the south of Wilsonville Road.

Additionally, SMART stops are located on either side of Wilsonville Road just to the west of the Rose Lane/Wilsonville Road intersection. Sidewalks and bike lanes are present on both sides of Wilsonville Road. The nearest traffic signals are 1,900 ft to the west at Town Center Loop West and 2,000+ ft to the east at Meadows Loop, creating almost a mile stretch of Wilsonville Road with no protected pedestrian crossing.

At the intersection, Wilsonville Road consists of a 20-foot-wide travel lane in the east direction, a 14-foot-wide turning lane, a 14-foot-wide travel lane in the west

direction, and six-foot-wide striped bike lanes in both directions, as noted earlier. The crossing of Wilsonville Road is currently unmarked.



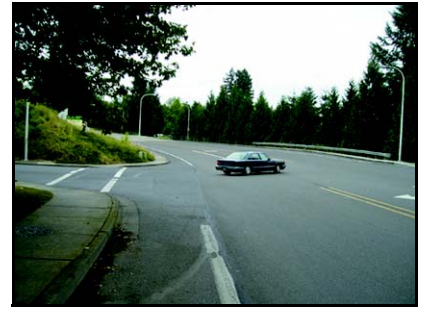
Vehicle traveling east on Wilsonville Road with ample lane space



SMART bus on Wilsonville Road

Challenges

High traffic volumes, higher than posted (35 mph) vehicle speeds along Wilsonville Road, and poor sight distances due to the curve in the road 100+ feet to the east of the intersection are all challenges for bicyclists and pedestrians at this location.



Vehicle turning from Rose Lane onto Wilsonville Road

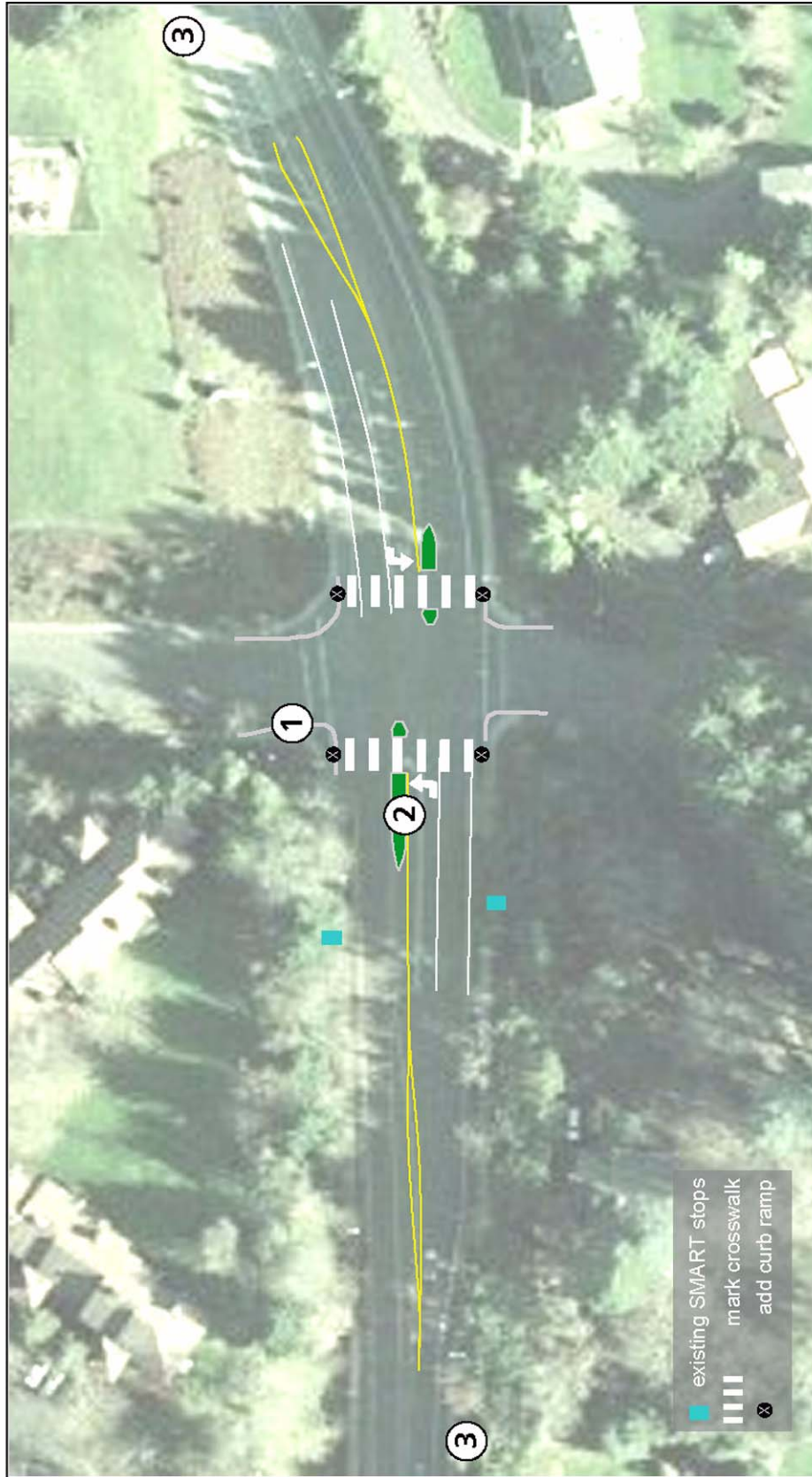
Recommendations

Warning signs and other devices should be installed to maximize bicyclist and pedestrian safety. Innovative treatments, such as textured crosswalks, warning lights that are passively activated by crosswalk users, and high-visibility markings could be considered as well.

General Recommendations:

- Shorten the crossing distances where possible.
- Create pedestrian refuge island to allow a two-stage crossing.
- Mark high-visibility crosswalks, add warning signs.

Rose Lane Crossing Improvements- Alternative II



- ① Tighten the radius on the turns into Rose Lane to decrease the crossing distance.
- ② Narrow the eastbound travel lane to accommodate a pedestrian refuge island, allowing pedestrians to complete the crossing in two stages. Stripe the pedestrian crossing.
- ③ Post warning signs to indicate to motorists to expect pedestrians crossing ahead.

Railroad Tracks

Existing Conditions

The railroad tracks are centrally located in one of the longest stretches of Wilsonville Road that does not contain a protected pedestrian crossing. Roughly a quarter-mile separates the



Railroad tracks crossing Wilsonville Road

signal at Kinsman Road and the signal at Boones Ferry Road. Wilsonville Road has sidewalks on both sides of the roadway, along with six-foot-wide bicycle lanes. The posted speed limit is 25 mph, and there are two 12-foot-wide travel lanes in each direction with a 14-foot-wide, raised center median at this particular location. There is no identified crossing at this location now. Anecdotal evidence collected from members of the community suggests that people already use this location as a crossing of Wilsonville Road. It is recommended that the City conduct a pedestrian study to identify potential crossing locations of the railroad tracks.

Challenges

High traffic volumes increase the safety risks and decrease the comfort level for pedestrians and bicyclists. Additionally, identifying the rail line as a potential crossing would need to be discussed with

officials from the rail line who might be uncomfortable with encouraging people to travel parallel to the rail line, even if only for a short crossing distance. In addition, as discussions to widen Wilsonville Road continue, the eventual lane configuration will have an impact on how feasible a mid-block crossing is in this location.

Recommendations

The suggested location for the site, with specific recommendations, is illustrated on the following page. Marking a crossing at this location provides bicyclists and pedestrians additional, safe options when choosing travel routes across Wilsonville Road. Warning signs and other devices could be installed to maximize bicyclist and pedestrian safety. Innovative treatments, such as textured crosswalks, warning lights that are passively activated by crosswalk users, and high-visibility markings should be considered as well. The City will need to do a study to determine if this is the best location for the crossing.

General Recommendations:

- Shorten the crossing distances where possible.
- Create a pedestrian refuge island to allow a two-stage crossing.
- Mark high-visibility crosswalks, add warning signs.

Alternatives Evaluation

Table 13 demonstrates the results of the evaluation criteria as applied to the two crossings examined. As the table demonstrates, a crossing at the railroad tracks is more desirable at this point in time than a mid-block crossing of Wilsonville Road at Rose Lane.

Table 13. Wilsonville Crossing Evaluation Matrix

Project	Connectivity	User Generator	Land Uses	Regional Benefits	Ease of Implementation	Totals
Rose Lane	15	10	10	0	10	45
Railroad Tracks	15	15	15	0	5	50

Wilsonville Road and Railroad Tracks Crossing Improvements



-  existing SMART stops
-  mark crosswalk
-  add curb ramp
-  add advance stop bar
-  pedestrian refuge



- 1** Formalize a pedestrian refuge within the existing median on Wilsonville Road.
- 2** Stripe a pedestrian crossing with continental crosswalks.
- 3** Stripe advance stop bars on Wilsonville Road.



7. Design Standards and Guidelines

Trail Designs

Innovative Roadside Treatments

Signing and Striping

Amenities

Safety On and Around the Trail

Roadway Crossings

7. Design Standards and Guidelines

Trail Designs

The following cross sections illustrate standard treatments for the primary trail, walkway, and bikeway design opportunities in Wilsonville. This section should be supplemented with other trail design documents, including ODOT's Bicycle and Pedestrian Master Plan, Metro's "Green Trails: Guidelines for Building Environmentally Friendly Trails," AASHTO, the MUTCD, and City standards.

Table 14. Standard Trail Treatments

Design Designation	Width	Surface	Treatment	Function
Sidewalk	5-10 ft	Concrete	Separated vertically on curb or horizontally by planting strip.	Typical treatment for local access walkways. Pedestrian and wheelchair users, provides access to homes and businesses.
Bike Lane	5-6 ft	Asphalt	On-street lane striped and signed to City standards	For bicyclists on roadways. Wherever a bicycle system intersects with a signalized intersection, the signals should not be vehicle actuated unless the signal will also recognize all bicycles.
Signed Shared Roadways	N/A	N/A	Signed shared roadways are roadways identified as desirable bicycle routes, enhanced by the presence of directional signs for bicyclists and informational signs for motorists noting the presence of bicyclists. May either be a low volume (less than 3,000 cars per day) roadway with traffic calming and signage to create a safe shared use environment, OR a higher volume roadway with wide (14-ft) outside lanes.	Used in combination with sidewalks or shared use paths on one side of road. Wherever a bicycle system intersects with a signalized intersection, the signals should not be vehicle actuated unless the signal will also recognize all bicycles.
Shared-Use Path	10-14 ft	Asphalt, concrete, or other smooth hard surface	Designed to City standards. Separated from roadway by planting strip or vertical curbing.	Typical application for regional trail and some community walkways and bikeways. Accommodates bicycles, pedestrians, wheelchairs. Minimizes potential trail crossing conflicts with autos.
Hiking Path	3-12 ft	Earthen or gravel surface	Vegetation cleared, slope stabilized.	Typical application for in-park non-primary circulation trails. Provides walking routes for pedestrians. May be designed for equestrians and bicyclists.

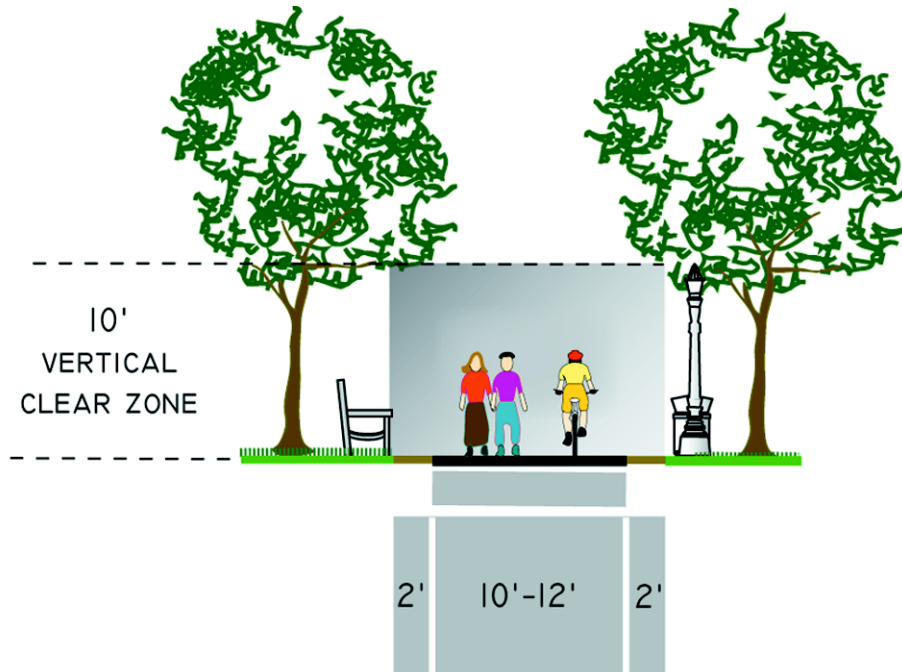


Figure 10. Regional Trail

Regional Trail

Figure 10 illustrates a typical shared use path design that is appropriate for regional trails and some community trails. This trail is designed to accommodate two-way bicycle and pedestrian traffic, typically has its own right-of-way (for a minimum of 75% if its length, although portions of the trail can be on-street), and can accommodate maintenance and emergency vehicles. This type of trail is typically paved (asphalt or concrete) but can also be a surface that provides a smooth surface, as long as it meets ADA requirements. Wider soft shoulders should be provided for runners/joggers if space allows.

Community Walkways and Bikeways

As noted earlier, the design of community walkways and bikeways will vary according to the functional classification of the facility as well as the average daily traffic (ADT) on the adjacent roadway. The following designs illustrate the application of community walkways and bikeways on High Volume Roadways, such as Wilsonville Road and Elligsen Road, and Low Volume Roadways such as French Prairie Drive or Wilson Lane. These figures are conceptual and are provided to look at the bicycle and pedestrian portion of the right-of-way, and are not intended to change travel lane widths.

High-Volume Roadways

On roadways with 3,000 or more vehicles a day, bicycle lanes should be used to improve bicyclist safety and comfort. A buffer or curb must separate the shared use path or sidewalk from the roadway for pedestrian safety. The width of the bicycle lane, buffer, and sidewalk or path should appropriately reflect the volume and speed of the vehicles using the roadway.

Figure 11 on page 123 illustrates typical bicycle and pedestrian accommodation in urbanized areas. The width of the sidewalk should depend on anticipated use; more users warrant a wider walkway. Sidewalks should be a minimum of six feet exclusive of curb and obstructions. This width allows two pedestrians to walk side by side, or pass each other comfortably. It also allows two pedestrians to pass a third pedestrian without leaving the sidewalk. Where it can be justified and deemed appropriate, the minimum width may be five feet. On high volume roadways, sidewalks are preferably designed with a five-foot or wider planting strip to create greater separation between the pedestrian and the roadway. Where on-street parking is permitted, the bike lane must be between parking and the travel lane (Figure 12 on page 123). The minimum bike lane width is five feet from the face of a curb, guardrail, or parked cars, with six feet the preferred width in urbanized areas.

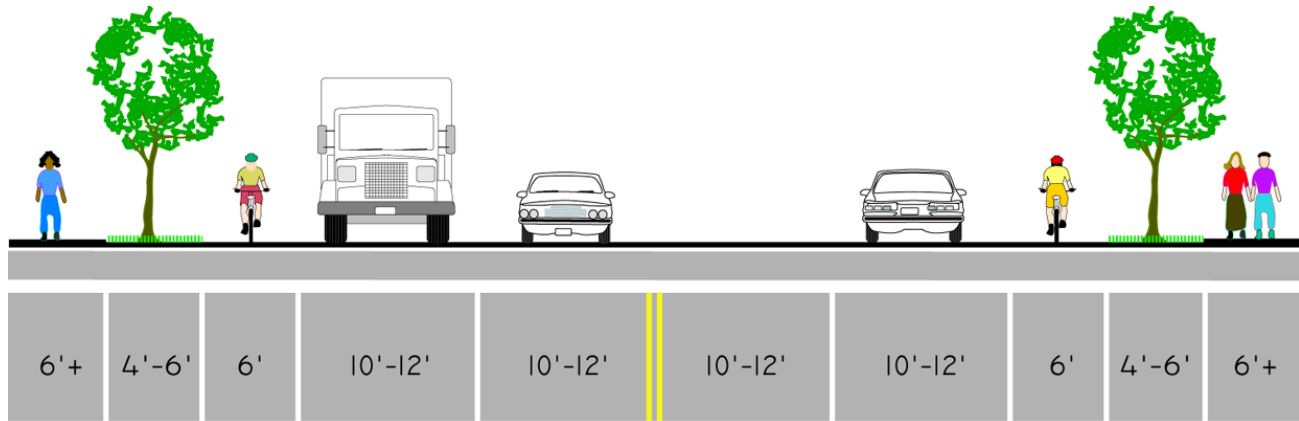


Figure 11. Option 1: High-Volume, High-Speed Roadway

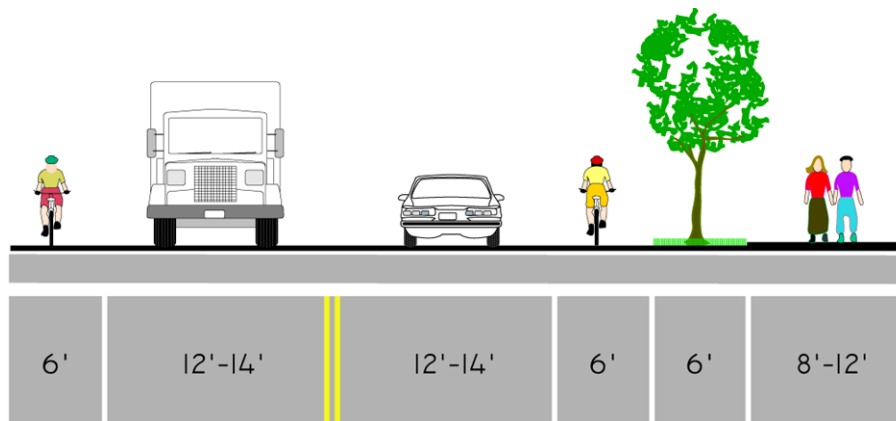


Figure 12. Option 2: Shared Use Path with Bike Lanes on a High-Volume, High-Speed Roadway

Some arterials and major collectors can accommodate a shared use path on one side of the roadway and on-street bicycle lanes for bicyclist commuters (Figure 12). The shared use path provides a comfortable walking space for pedestrians and enables children and recreational bicyclists to ride without the discomfort of riding in a busy street. This configuration works best along roadways with limited driveway crossings and with services primarily located on one side of the roadway.

Sometimes a shared use path can provide accommodation on high-volume, high-speed roadways (Figure 12). This type of trail works best in corridors where there are limited driveway/intersection crossings and more desirable destinations along one side of the roadway, or where no roadway space is available to provide bike lanes, yet the road travels past a number of desirable locations. This type of treatment may be appropriate for Town Center Loop and portions of Boones Ferry Road. The trail should be

at least 10 feet wide (preferably 12-15 feet) with a six-foot or greater vegetated buffer where possible.

Moderate-Volume Roadways

On moderate volume roadways, such as minor collectors, on-street parking is often permitted. Where on-street parking is permitted, and a bike lane is provided, the bike lane must be between parking and the travel lane (Figure 14 on page 124).

According to the 2003 Wilsonville TSP, bicycle lanes do not need to be striped on minor collectors until traffic volumes reach 1,500 vehicles per day, or as determined by the City Engineer. Up to that point, the travel lanes will each be 17 feet wide with parallel parking bays on either side. If travel speeds become excessively high, striping bicycle lanes may serve as traffic calming devices by narrowing the travel lanes to 12 feet wide.

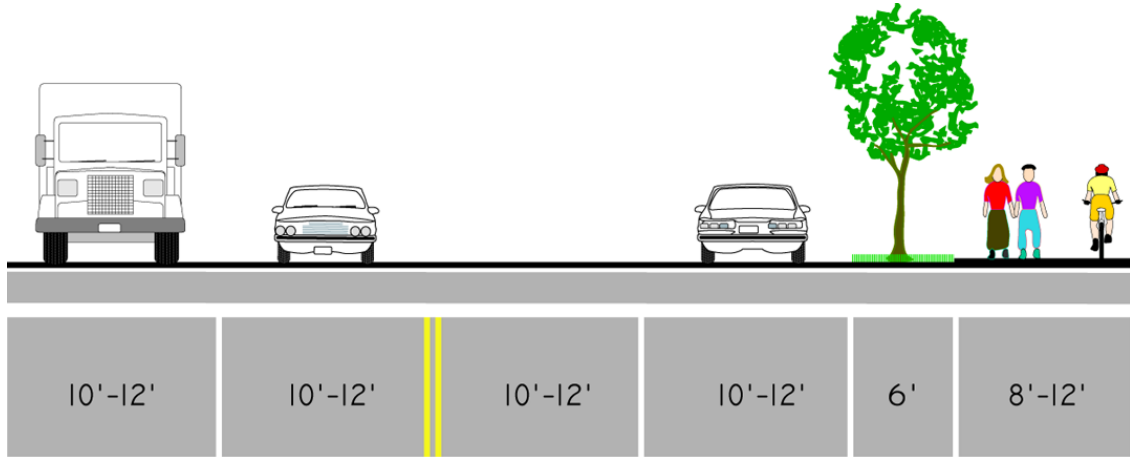


Figure 13. Option 3: Shared Use Path on a High-Volume, High-Speed Roadway

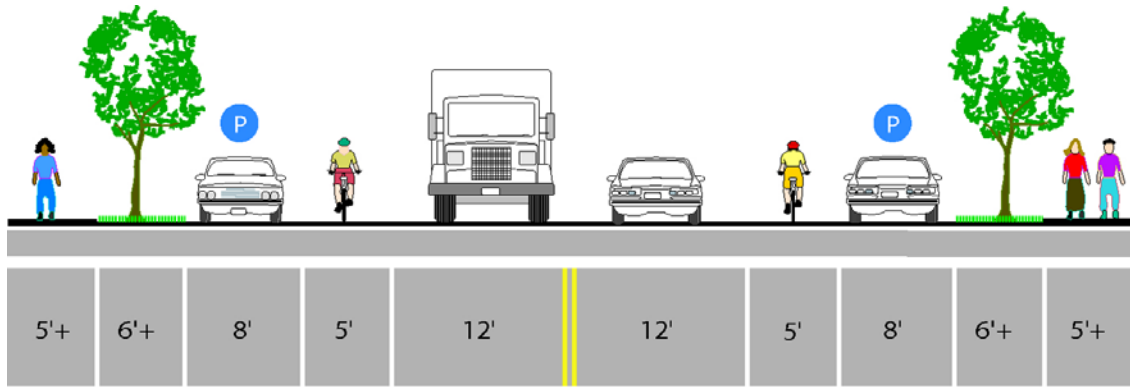


Figure 14. Option 1: Bike Lane with On-Street Parking on Moderate-Volume Roadway

Low-Volume Roadways

On a low-volume, low-speed roadway (i.e., residential or neighborhood streets such as Country View Lane, Willamette Way, and Orchard Drive), many bicyclists can safely share the road with vehicles (Figure 15). Pedestrians should be separated from the roadway with a buffer or a curb. A curb must be present if there is insufficient space for a buffer. The width of the sidewalk or trail should depend on the traffic volume and speeds of the adjacent roadway. This design corresponds to the residential street standards in the 2003 TSP.

Bicycle Boulevards

To further identify the street as a preferred route for bicyclists, the operation of lower volume roadways – such as Camelot Street and Meadows Loop – may be modified to function as a through street for bicycles while maintaining local access for automobiles (Figure 16 on page 126). Traffic calming devices, such as medians or traffic circles, reduce traffic speeds and

through trips while limiting conflicts between motorists and bicyclists. The addition of bikeway signage (see Signing and Striping on page 131) enhances the experience for bicyclists by providing directional information to increase the comfort and confidence of the cyclists.

Local Trail: City Trail

City trails, such as those found in Town Center Park and Memorial Park, provide access for most, if not all, trail users within neighborhoods, parks, greenspaces, and other recreational areas.(Figure 17 on page 127) They are similar to regional trails in that they typically have their own right-of-way and serve only non-motorized users. These trails should be at least six feet wide and at least eight feet wide if bicycle use is anticipated. All efforts should be made so that at least one ADA accessible trail is available and serves the most desirable parts of the area (i.e., picnic areas, viewpoints, playground equipment, etc.)

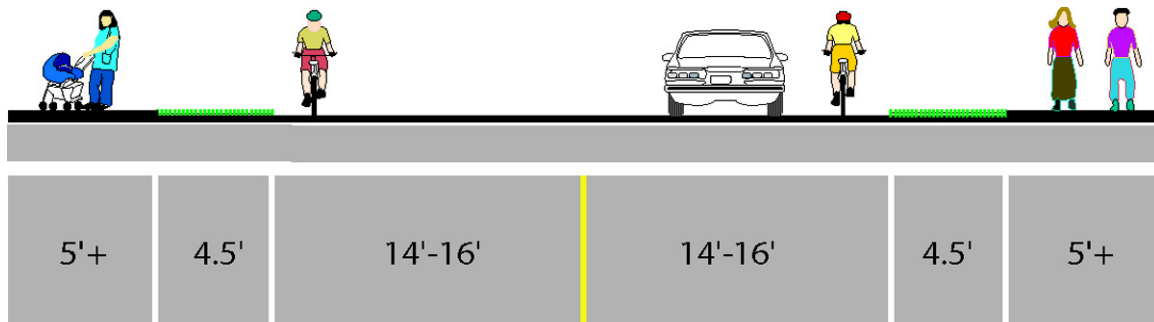


Figure 15. Low-Volume, Low-Speed Roadway

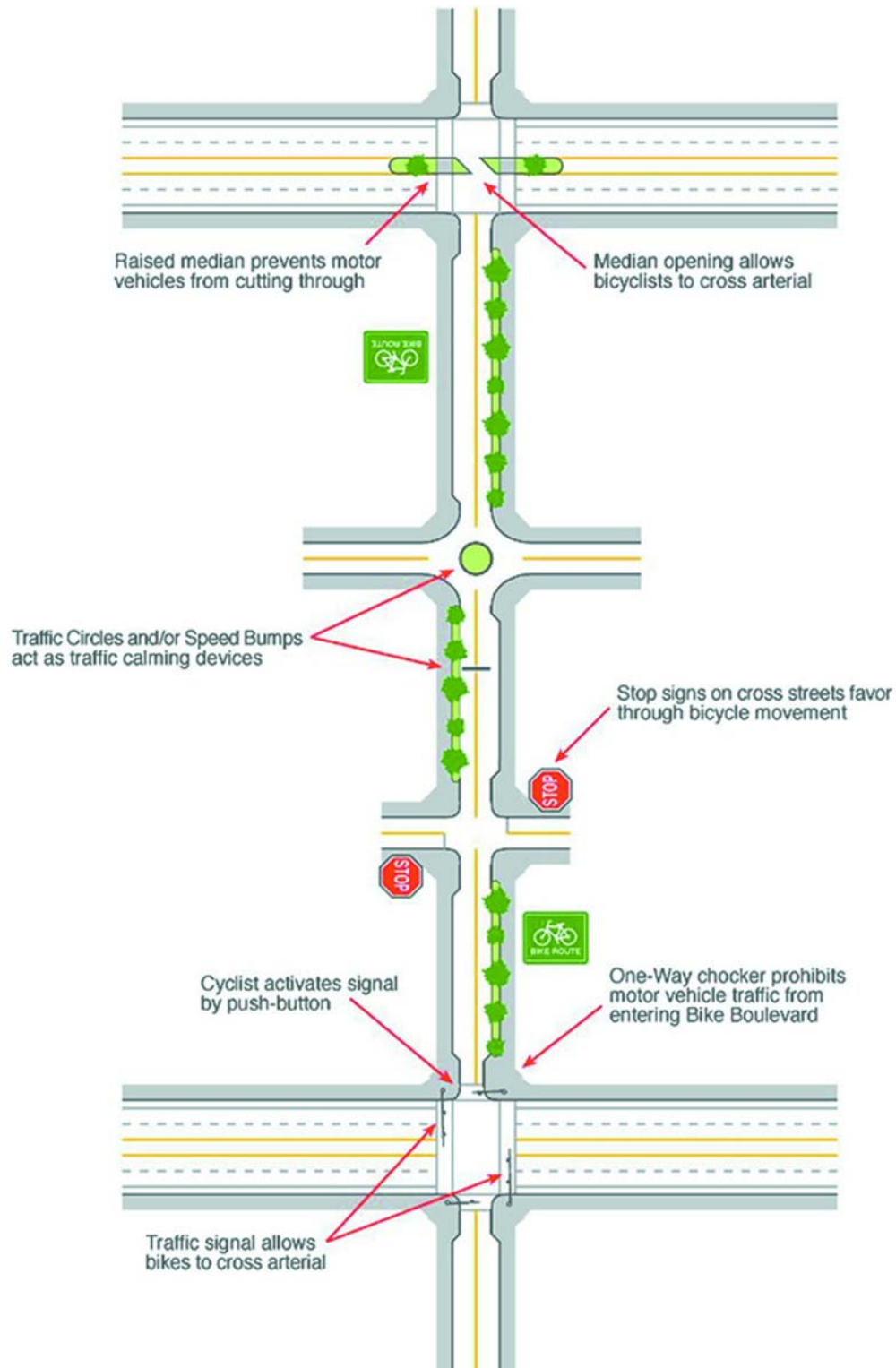


Figure 16. Bicycle Boulevards

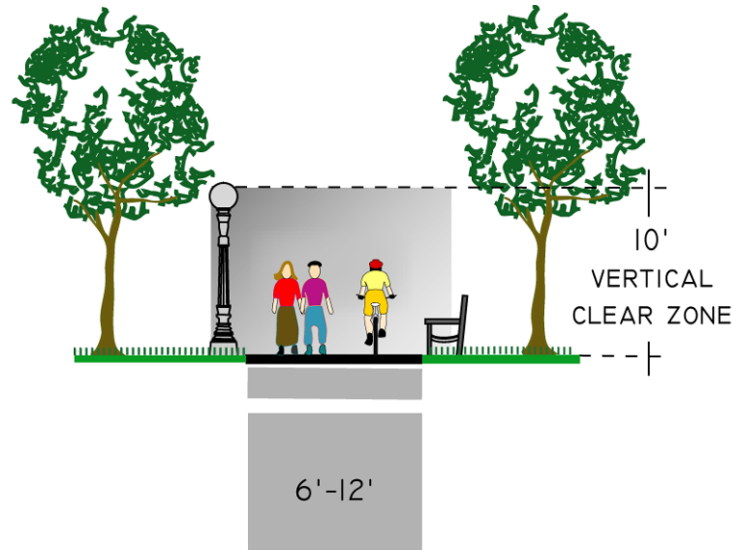


Figure 17. Paved City Trail

Local Trail: Natural Trail

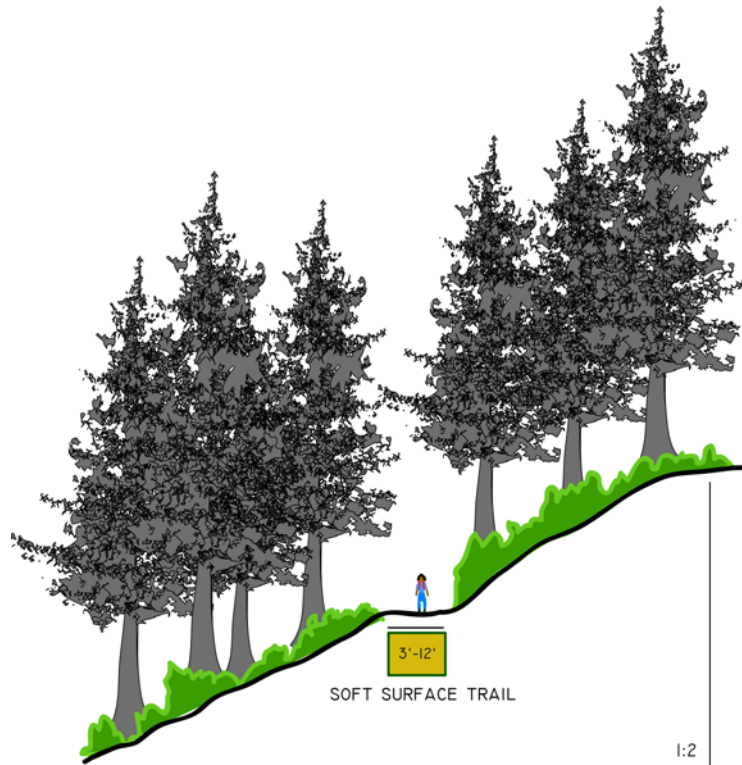


Figure 18. Natural Trail

Natural trails are usually considered when a trail is desired next to a natural resource. (Figure 18) Trail width will vary depending on the existing topographic and environmental conditions. Natural trails should take

into account drainage, erosion, compaction/impaction from anticipated use, presence of waterways and sensitive riparian areas, habitat areas, environmental guidelines, such as "Green Trails" Guidelines for

Environmentally Friendly Trails" by Metro, and regulations found in Wilsonville's City Code.

Trail width will depend on intended users. For example, narrower widths should be used in environmentally constrained areas with only hiking uses intended. Wider widths are desirable for shared bicycle and/or equestrian use. Areas with natural trails (i.e., natural parks and greenspaces) should have a complimentary accessible route that meets or exceeds ADA standards in addition to the natural trails.

Local Trail: Accessway

Accessways provide direct connections for trail users to schools, parks, community centers, retail areas, neighborhoods, and other trails. (Figure 19) They are intended to be short, direct connections to reduce unnecessary out-of-direction travel for bicyclists and pedestrians. Accessways in parks, greenways, or other natural resource areas may have a five-foot-wide gravel path with wooden, brick, or concrete edgings.

In Wilsonville, another unique type of accessway is a path between houses connecting two streets (Figure 20). This accessway should be a minimum of eight feet wide with two-foot planted shoulders on either side. On occasion, the path may cross an alleyway that serves the adjacent houses. In these instances, the path should be marked with SLOW markings as well as a large warning stripe prior to the path/alleyway intersection. The path itself should have YIELD signs (MUTCD sign R1-2) for bicyclists and pedestrians to yield to automobiles in the alleyway. The crossing should be marked in a manner that is

easily identifiable to motorists, through striping and possibly coloring as well. "XING" markings should also be marked along the alleyway prior to the crossing to provide additional information to the motorist. Since visibility for both path users and motorists will be greatly reduced, mirrors should be located to allow motorists to see down the path and bicyclists and pedestrians to see the alleyway. A concern is that some bicyclists may travel at excessive speeds and not cross the alleyway in a safe manner. If the markings and signage are not sufficient in encouraging safe behavior, there are several options, that could be used such as a speed table or speed bumps to the path. Speed bumps would be difficult for some users to navigate, particularly younger children and in-line skaters. Fencing could be installed prior to the crossings, requiring bicyclists to either dismount or greatly reduce speed before crossing. This type of option makes it very difficult for bicyclists with trailers, pedestrians with strollers, or other users with mobility devices to use the path.

Innovative Accessways

There are also other innovative ways to provide direct access, particularly in topographically constrained areas (i.e., on steep hills, over waterways, etc.) Stairs, alleyways, bridges, and elevators can provide quick and direct connections throughout the city and can be designed so they are safe, inviting, and accessible to most trail users. For example, stairways can have wheel gutters so that bicyclists can easily roll their bicycles up and down the incline and boardwalks can provide access through sensitive wet areas and across small waterways (see Figure 21).

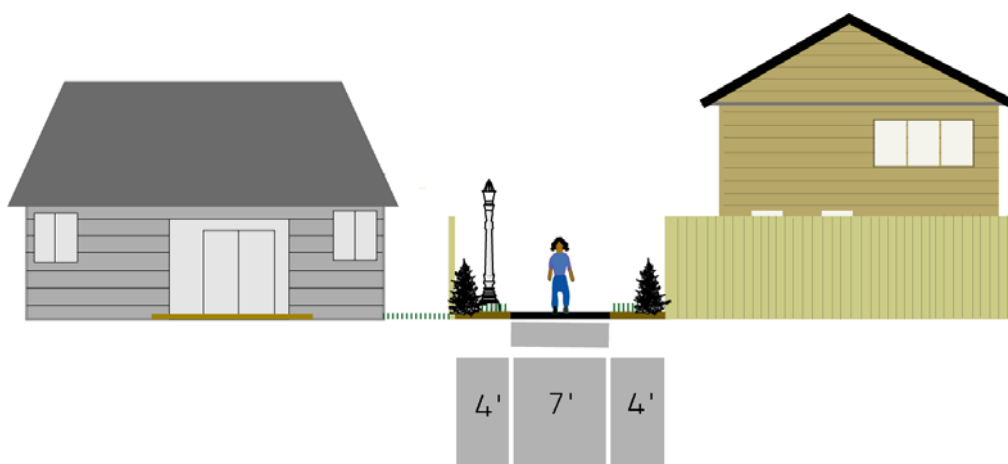


Figure 19. Bicycle and Pedestrian Accessway

7. Design Standards and Guidelines

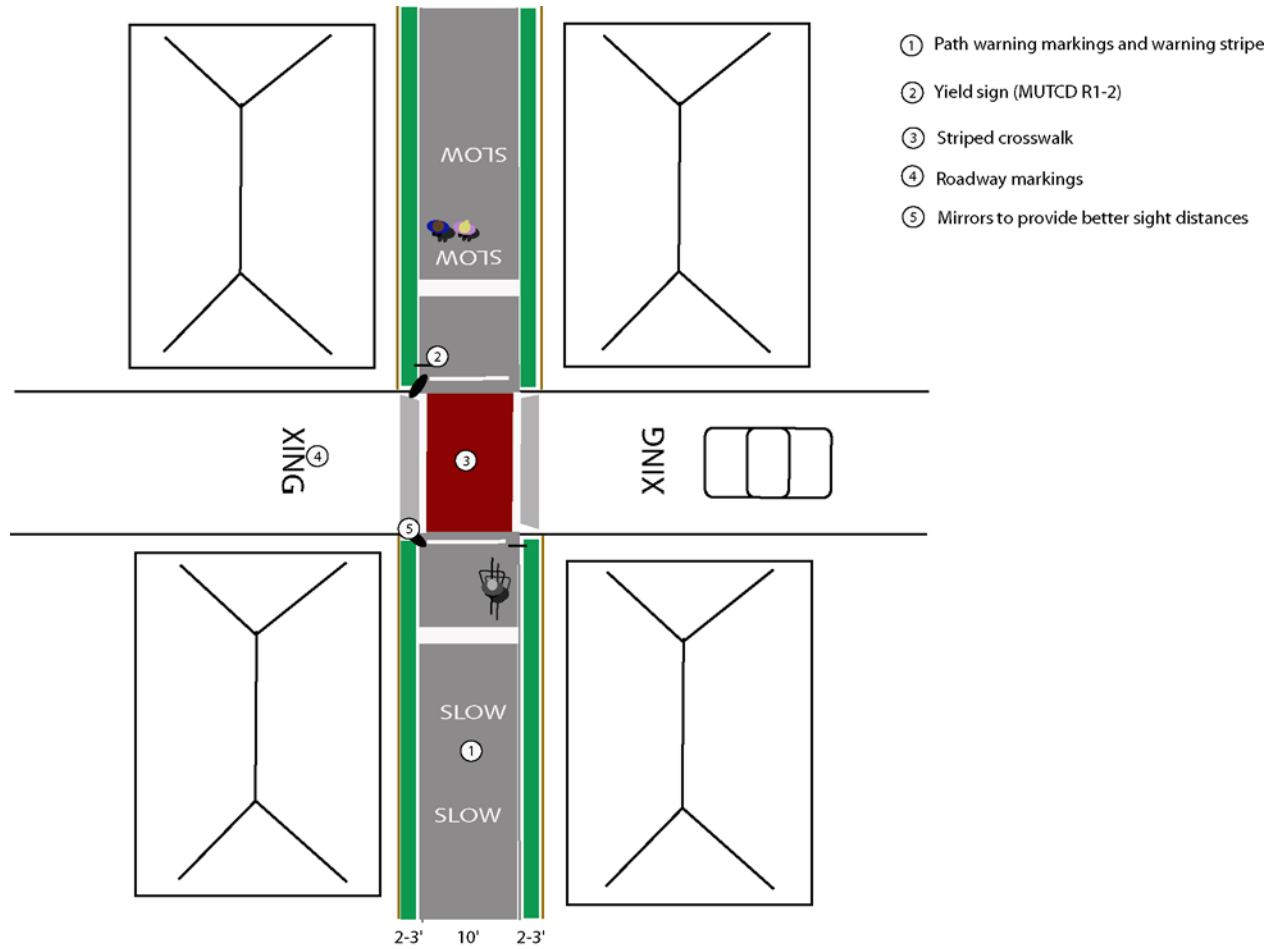


Figure 20. Alley Intersection



Figure 21. Innovative Accessways

Innovative Roadside Treatments

Filter strips and bio-swales are innovative ways to retain and treat stormwater from impervious surfaces and work well with roadside trails. The design guidelines for filter strips and swales are similar; both methods use grassy vegetation or aggregate to remove sediment from stormwater runoff. Use of filter strips and swales can be limited in retrofit situations due to slope, soil, right-of-way conditions, and existing underground utility locations.

Filter Strips

Filter strips (Figure 22 and Figure 23) are gently sloped grassy and aggregate areas that are used to treat small quantities of sheet flow runoff. They are often used to pretreat stormwater flow of minimal depth (.5 inches) as it passes from an impervious area, like a parking lot or roadway, into a swale or infiltration area. Sidewalk width illustrated is a minimum.

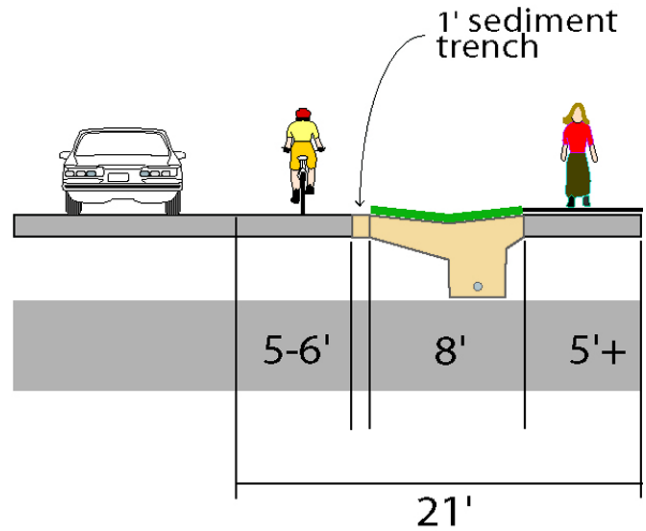


Figure 23. Grass Filter Strip

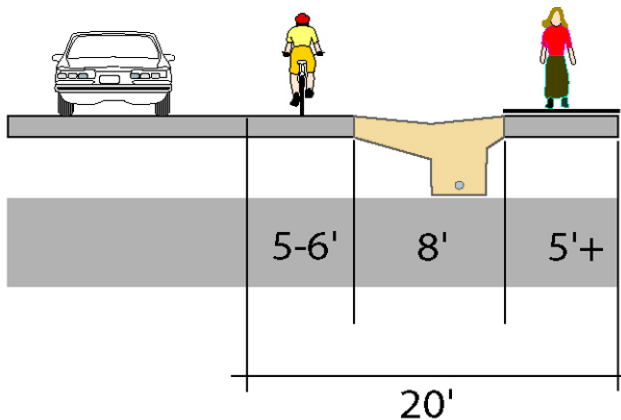


Figure 22. Aggregate Filter Strip

Swales

Swales (Figure 24 on page 131) are shallow, wide depressions adjacent to roadways and trails that collect stormwater runoff over vegetation to slowly settle sediments and particulate matter. The pollutants are filtered out, settled, or removed by plants, causing fewer pollutants to enter ecologically sensitive water bodies. For more information and further design guidelines for swales and other Green Street concepts, consult Metro's "Green Streets" guidebook.



Bio-swale

Bio-Swale Guidelines from Metro's "Green Streets"	
Optimal length	200-250 ft
Slope of sides (optimal)	1-2%
Slope of sides (minimum, maximum)	1%, 6%
Optimal water depth	3 in
Optimal width	12 ft

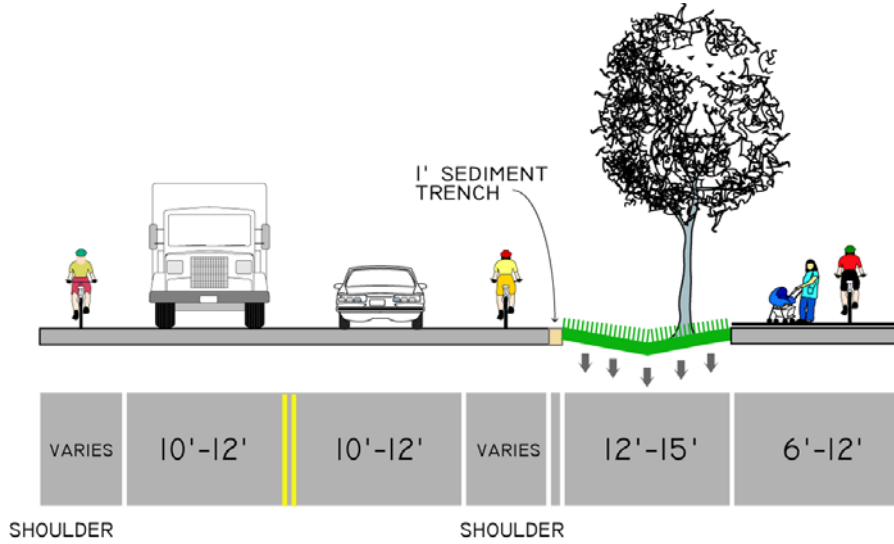


Figure 24. Bio-swale

Signing and Striping

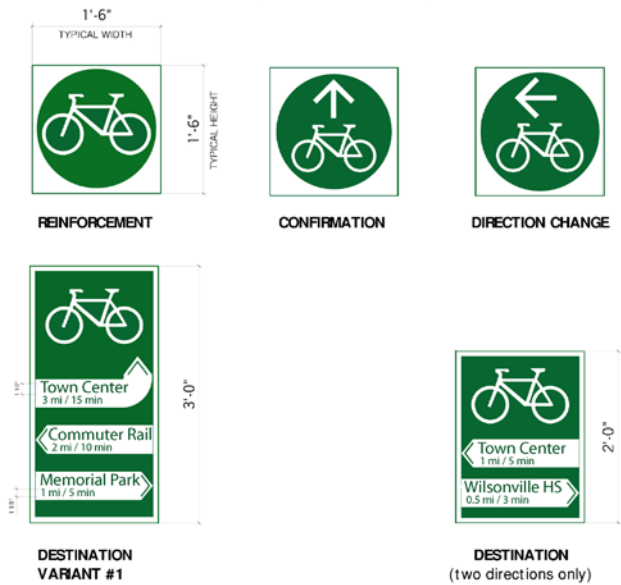
On-Road Facilities

This section applies to those segments identified as community walkways and bikeways that exist as part of the roadway network. This includes bike lanes, bike routes, and sidewalks. Locations that have been identified as bicycle lanes will be striped and maintained by the city of Wilsonville. The bicycle lane striping should follow guidelines presented in this plan and supported by standards from the AASHTO Guide to Bicycle Facilities, the Oregon Bicycle and Pedestrian Plan, and the Manual on Uniform Traffic Control Devices (MUTCD).

Bike lanes and bike routes should also have additional on-road symbols where appropriate as established in the standards mentioned earlier. Signage is also an important part of the bicycle and pedestrian network. Figure 25 shows a number of different signs and markings, both on poles and on the roadway, that the City of Portland has adopted for their new bicycle signage program. The signs have been approved by ODOT, and are being installed around Portland. Signs such as these improve the clarity of travel while illustrating that destinations are really only a short ride away.

Wilsonville should also review the existing signage to ensure it is serving the intended purpose and that the signs are highly visible to bicyclists and pedestrians.

POLE MOUNTED SIGNS (ink on reflective sign blanks)



PAVEMENT MARKING SIGNS (cut out thermoplastic shapes)



Figure 25. On-Road Facilities Signage

Separated Facilities

This section applies to those segments of community walkways and bikeways, local trails, and regional trails that are separated facilities from the current roadway system. Crossing features for all roadways include warning signs both for vehicles and trail users. The type, location, and other criteria are identified in the Manual for Uniform Traffic Control Devices (MUTCD). Adequate warning distance is based on vehicle speeds and line of sight. Signage should be highly visible; catching the attention of motorists accustomed to roadway signs may require additional alerting devices such as a flashing light, roadway striping or changes in pavement texture. Signage for trail users must include a standard stop sign and pavement marking, sometimes combined with other features such as bollards or a kink in the trail to slow bicyclists. Care must be taken not to place too many signs at crossings lest they overwhelm the user and lose their impact.

Directional signing may be useful for trail users and motorists alike. For motorists, a sign reading "Bicycle Trail Xing" along with a Wilsonville trail emblem or logo helps both warn and promote use of the trail itself. For trail users, directional signs and street names at crossings help direct people to their destinations.

The directional signing should impart a unique theme so trail users know which trail they are following and where it goes. The theme can be conveyed in a variety of ways: engraved stone, medallions, bollards, and mile markers. A central information installation at trailheads and major crossroads also helps users find their way and acknowledge the rules of the trail. (Figure 26) They are also useful for interpretive education about plant and animal life, ecosystems, and local history. Information regarding the various slopes of trails can also be incorporated into the trailhead to ensure that users do not get into trouble on a path that is beyond their capabilities.

A number of striping patterns have emerged over the years to delineate trail crossings. A median stripe on the trail approach will help to organize and warn trail users. The actual crosswalk striping is a matter of local and State preference, and may be accompanied by pavement treatments to help warn and slow motorists. The effectiveness of crosswalk striping is highly related to local customs and regulations. In communities where motorists do not typically yield to pedestrians in crosswalks, additional measures may be required.

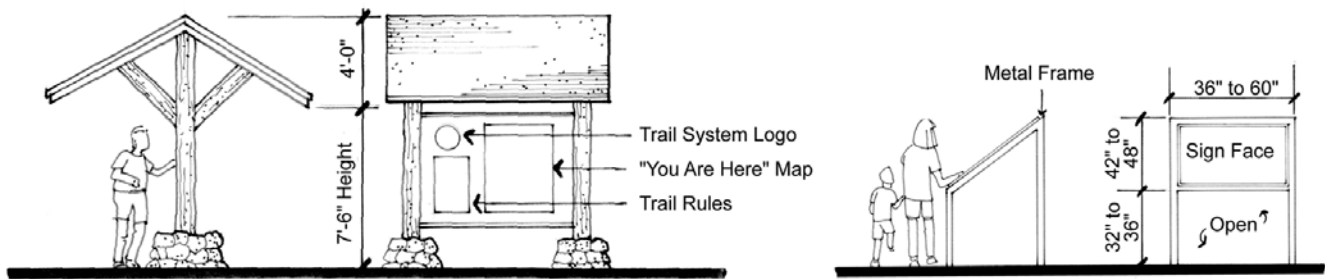


Figure 26. Trailhead Information Installation Examples



Wooden bollard with directional information



Inlaid medallions



Stone mileage marker

Amenities

There are a number of amenities that make a bicycle and pedestrian system inviting to the user. Below are some common amenities that make systems stand out.



Interpretive Installations

Interpretive installations and signs can enhance the users experience by providing information about the history of Wilsonville. Installations can also discuss local ecology, environmental concerns, and other educational information.



Water Fountains and Bicycle Parking

Water fountains provide water for people (and pets, in some cases) and bicycle racks allow recreational users to safely park their bikes if they wish to stop along the way, particularly at parks and other desirable destinations.



Pedestrian-Scale Lighting and Furniture

Pedestrian-scale lighting improves safety and enables the facility to be used year-round. It also enhances the aesthetic of the trail. Lighting fixtures should be consistent with other light fixtures in the city, possibly emulating a historic theme. Lighting fixtures should be designed to reduce or eliminate light pollution onto neighboring properties.

Providing benches at key rest areas and other appropriate locations, as well as viewpoints encourages people of all ages to use the trail by ensuring that they have a place to rest along the way. Benches can be simple (e.g., wood slates) or more ornate (e.g., stone, wrought iron, concrete).



Maps and Signage

A comprehensive signing system makes a bicycle and pedestrian system stand out. Informational kiosks with maps at trailheads and other pedestrian generators can provide enough information for someone to use the network with little introduction - perfect for areas with high out-of-area visitation rates as well as the local citizens.



Art Installations

Local artists can be commissioned to provide art for the trail system, making it uniquely distinct. Many trail art installations are functional as well as aesthetic, as they may provide places to sit and play on.

Safety On and Around the Trail

Creating a safe trail environment goes beyond design and law enforcement and should involve the entire community. The most effective and most visible deterrent to illegal activity on trails in Wilsonville will be the presence of legitimate trail users. Getting as many "eyes on the corridor" as possible is a key deterrent to undesirable activity. There are several components to accomplishing this as outlined below:

Provide Good Access to Trails

Access ranges from providing conveniently located trailheads along the trail, to encouraging the construction of sidewalks to accommodate access from private developments adjacent to the trail. Access points should be inviting and signed so as to welcome the public onto the trail.

Good Visibility from Adjacent Neighbors

Neighbors adjacent to the trail can potentially provide 24-hour surveillance of the trail and can become Wilsonville's biggest ally. Though some screening and setback of the trail is needed for privacy of adjacent neighbors, blocking the trail completely from neighborhood view should be discouraged. This eliminates the potential of neighbor's "eyes on the trail," and could result in a "tunnel effect" on the trail.

High Level of Maintenance

A well-maintained trail sends a message that the community cares about the public space. This message alone will discourage undesirable activity along the trail.

Programmed Events

Community events along the trails will help increase public awareness and thereby attract more people to use the trail. Neighbors and residents, as well as a newly created Friends of Wilsonville Trails group, can help organize numerous public events along the trail which will increase support for the trail. Events might include a day-long trail clean-up or a series of short interpretive walks led by long-time residents or a park naturalist. Friends of the Trails can also generate public support for future funding applications.

Community Projects

The support generated by community groups could be further capitalized by involving neighbors and friends of the trail in a community project. Ideas for community projects include volunteer planting events, art projects, interpretive research projects, or even bridge building events. These community projects are the strongest means of creating a sense of ownership along the trail that is perhaps the strongest single deterrent to undesirable activity along the trail.

Adopt-a-Trail Program

Nearby businesses, community institutions, and residential neighbors often see the benefit of their involvement in the trail development and maintenance. Businesses and developers may view the trail as an integral piece of their site planning and be willing to take on some level of responsibility for the trail. Creation of an adopt-a-trail program should be explored to capitalize on this opportunity and build civic pride.

Trail Watch Program

Partnering with local and county law enforcement, a trail watch program would provide an opportunity for local residents to become actively involved in crime prevention along the trails in Wilsonville. Similar to Neighborhood Watch programs, residents are brought together to get to know their neighbors, and are educated on how to recognize and report suspicious activity.

Table 15 on page 136 summarizes some of the key safety issues and recommended strategies for addressing the concerns of Wilsonville residents.

Property Owner Safety and Security

Successful trails provide pleasant, safe environments for trail users while creating a wonderful amenity for adjacent property owners. While property owners often express concern over safety and security issues when a trail is proposed, experience in the Portland Metro region has shown that a well-designed trail enhances property values and safety, and coupled with implementation of the safety recommendations in Table 15, creates a positive situation for the city, trail users, and the adjacent property owners. It is important to involve property owners in trail planning and design, ensure their concerns are heard and addressed, and involve them in an on-going monitoring of trail activities and maintenance.

Table 15. Safety Recommendations

Safety Issue	Recommended Improvements
<p>Privacy of adjacent property owners This was one of the biggest concerns expressed by residents to the City of Wilsonville. Concern is that the trail will bring people into areas that have for decades been quasi-private. Trail users will be able to peer into people's backyards and homes.</p>	<ol style="list-style-type: none"> 1. Encourage the use of neighborhood friendly fencing and also planting of landscape buffers. 2. Clearly mark trail access points. 3. Post trail rules that encourage respect for private property. 4. Strategically place lighting. 5. Consider strategic placement of surveillance cameras to protect property owners' privacy and discourage trespassing.
<p>Litter and Dumping</p>	<ol style="list-style-type: none"> 1. Post trail rules encouraging pack it in pack it out etiquette. 2. Place garbage receptacles at trailheads. 3. Provide good visual access to the trail. 4. Strategically-placed lighting, utilizing light shields to minimize unwanted light in adjacent homes. 5. Manage vegetation within the right-of-way to allow good visual surveillance of the trail from adjacent properties and from roadway/trail intersections. 6. Encourage local residents to report incidents as soon as they occur. 7. Remove dumpsites as soon as possible. 8. Encourage use of yard debris recycling service.
<p>Trespassing Trespassing through people's backyards and onto boat docks was a concern expressed by some members of the public.</p>	<ol style="list-style-type: none"> 1. Clearly distinguish public trail right-of-way from private property through the use of vegetative buffers and the use of good neighbor type fencing. 2. Post trail rules that encourage respect for private property.
<p>Crime Undesirable transient activity should be handled following these recommendations as well.</p>	<ol style="list-style-type: none"> 1. Manage vegetation so that corridor can be visually surveyed from adjacent streets and residences. 2. Select shrubs that grow below three feet in height and trees that branch out greater than six feet in height. 3. Place lights strategically and as necessary. 4. Place benches and other trail amenities at locations with good visual surveillance and high activity. 5. Provide mileage markers at quarter-mile increments and clear directional signage for orientation. 6. Create a "Trail Watch Program" involving local residents. 7. Proactive law enforcement. Use trail corridors for bicycle patrol training.
<p>Intersection Safety Roadway and trail crossings present a potential safety concern between trail users and cars. See Roadway Crossings on page 137 for more information.</p>	<ol style="list-style-type: none"> 1. Require all trail users to stop at public roadway intersections through posting of stop signs. 2. Provide cross walk striping and trail crossing warning signs for vehicle drivers. Put Wilsonville Trail logo on warning signs. 3. Manage vegetation at intersections to allow visual access at crossings.
<p>Local On-Street Parking</p>	<ol style="list-style-type: none"> 1. Post local residential streets as parking for local residents only to discourage trail user parking. Place "no outlet" and "no parking" signs prior to trail access points.
<p>Trailhead Safety</p>	<ol style="list-style-type: none"> 1. Clearly identify trailhead access areas. 2. Provide sufficient lighting and visibility around trailhead. 3. Provide a Public Safety telephone to provide access to communication.
<p>Vandalism</p>	<ol style="list-style-type: none"> 1. Select benches, bollards, signage and other site amenities that are durable, low maintenance and vandal resistant. 2. Respond through removal or replacement in rapid manner. 3. Keep a photo record of all vandalism and turn over to local law enforcement. 4. Encourage local residents to report vandalism. 5. Create a trail watch program; maintain good surveillance of the corridor. 6. Involve neighbors in trail projects to build a sense of ownership. 7. Place amenities (benches, etc.) in well used and highly visible areas.

Roadway Crossings

The most basic crossing type is an unmarked, unsignalized crossing, at which a bicyclist or pedestrian waits for a gap in traffic to cross. The lack of markings or signals at most crossings can be very intimidating for bicyclists and pedestrians, and may be challenging enough to discourage people from choosing those modes of transport. However, in most cases, roadway crossings can be properly designed at-grade to a reasonable degree of safety and meet existing traffic and safety standards.

Grade separated crossings are recommended in certain situations, which are discussed further in the study when examining I-5 and potential crossing opportunities. The conversion of existing at-grade crossings to grade-separated crossings is a difficult and expensive undertaking and should be considered where other traffic control measures have failed, where the natural topography lends itself to a grade-separated crossing, or where persistent safety issues exist.

Roadway crossings should comply with the Association of American State Highway and Transportation Officials (AASHTO) Guide for the Development of Bikeway Facilities and "A Policy on the Geometric Design of Highways and Streets" (Green Book), Oregon Department of Transportation (ODOT), and Manual of Uniform Traffic Control Devices (MUTCD) standards.

Evaluation of roadway crossings involves analysis of vehicular and trail user traffic patterns, including speeds, street width, traffic volumes (average daily traffic, peak hour traffic), line of sight, and trail user profile (age distribution, destinations). This study identifies the most appropriate crossing options given available information, which must be verified and/or refined through the actual engineering and construction document stage.

Crossing Prototypes

This study is based on established standards,⁶ published technical reports,⁷ and the experiences from

cities around the country.⁸ The Wilsonville crossings will fit into one of five basic categories:

- Type 1: Marked/Unsignalized
- Type 1+: Marked/Enhanced
- Type 2: Route Users to Existing Intersection
- Type 3: Signalized/Controlled
- Type 4: Grade-separated crossings

Type 1: Marked/Unsignalized Crossings

A Marked/Unsignalized crossing (Type 1) consists of a crosswalk, signing, and often no other devices to slow or stop traffic. The approach to designing crossings at midblock locations depends on an evaluation of vehicular traffic, line of sight, trail traffic, use patterns, vehicle speed, road type and width, and other safety issues such as the proximity of schools. The following thresholds recommend where Unsignalized crossings may be acceptable:

- Maximum traffic volumes:
 - 9,000-15,000 Average Daily Traffic (ADT) up to 15,000 ADT on two-lane roads, preferably with a median.
 - up to 12,000 ADT on four-lane roads with median.
- Maximum travel speed:
 - 35 mi/h
- Minimum line of sight:
 - 25 mi/h zone: 155 feet
 - 35 mi/h zone: 250 feet
 - 45 mi/h zone: 360 feet

This includes the majority of streets and crossings in Wilsonville with their current traffic volumes. For example, Rogue Lane and Memorial Drive, or Boones Ferry Road and 5th Street.

Marked mid-block crossings should be installed under special circumstances.

6. MUTCD, AASHTO Guide for the Development of Bicycle Facilities, Oregon Pedestrian and Bicycle Guide.

7. Federal Highway Administration (FHWA) Report, "Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations."

8. In particular, the recommendations in this report are based in part on experiences in cities like Portland (OR), Seattle (WA), Tucson (AZ), and Sacramento (CA), among others.

If well designed, crossings of multi-lane higher volume arterials over 15,000 ADT may be unsignalized with features combining some or all of the following:



Type 1 crossing

excellent sight distance, sufficient crossing gaps (more than 60 per hour), median refuges, advance stop bars with appropriate signage, and/or active warning devices like flashing beacons or in-pavement flashers. These are referred to as Type 1 Enhanced (Type 1+).

On roadways with low to moderate volumes of traffic (< 10,000 ADT) and a need to control traffic speeds, a raised crosswalk may be the most appropriate crossing design to



Raised crosswalk

improve pedestrian visibility and safety. This type of roadway feature is currently not allowed within Wilsonville. It is recommended that the possibility of allowing raised crosswalks be explored further. This might be appropriate at the crossing of Lancelot Lane and Camelot Lane, where the trail for the park at Merryfield begins.

The crosswalks are raised 75 mm above the roadway pavement, similar to speed humps, to an elevation that matches the adjacent sidewalk. The top of the crosswalk is flat and typically made of asphalt, patterned concrete, or brick pavers. Brick or unit pavers should be discouraged because of potential problems related to pedestrians, bicycles, and ADA requirements for a continuous, smooth, vibration-free surface. Tactile treatments are recommended at the sidewalk/street boundary so that visually impaired pedestrians can identify the edge of the street. Costs can range from \$5,000 to \$20,000 per crosswalk, depending on the width of the street, the drainage

improvements affected, and the materials used for construction.

A flashing yellow beacon – such as on Wilsonville Road at Landover – may be used, preferably one that is activated by the bicyclist or pedestrian, rather than operating continuously. This equipment, while slightly more expensive, will help keep motorists alert. The costs will range between \$5000 and \$15,000 depending on the need for poles with arms and overhead mounted signals.

Type 2: Route Users to Existing Intersection

Crossings within 250 feet of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection for safety purposes. For this option to be effective, barriers and signing may be needed to direct trail users to the signalized crossings. In most cases, signal modifications would be made to add pedestrian detection and to comply with the ADA. In many cases, such as on most community trails parallel to roadways, crossings are simply part of the existing intersection and are not a significant problem for trail users.

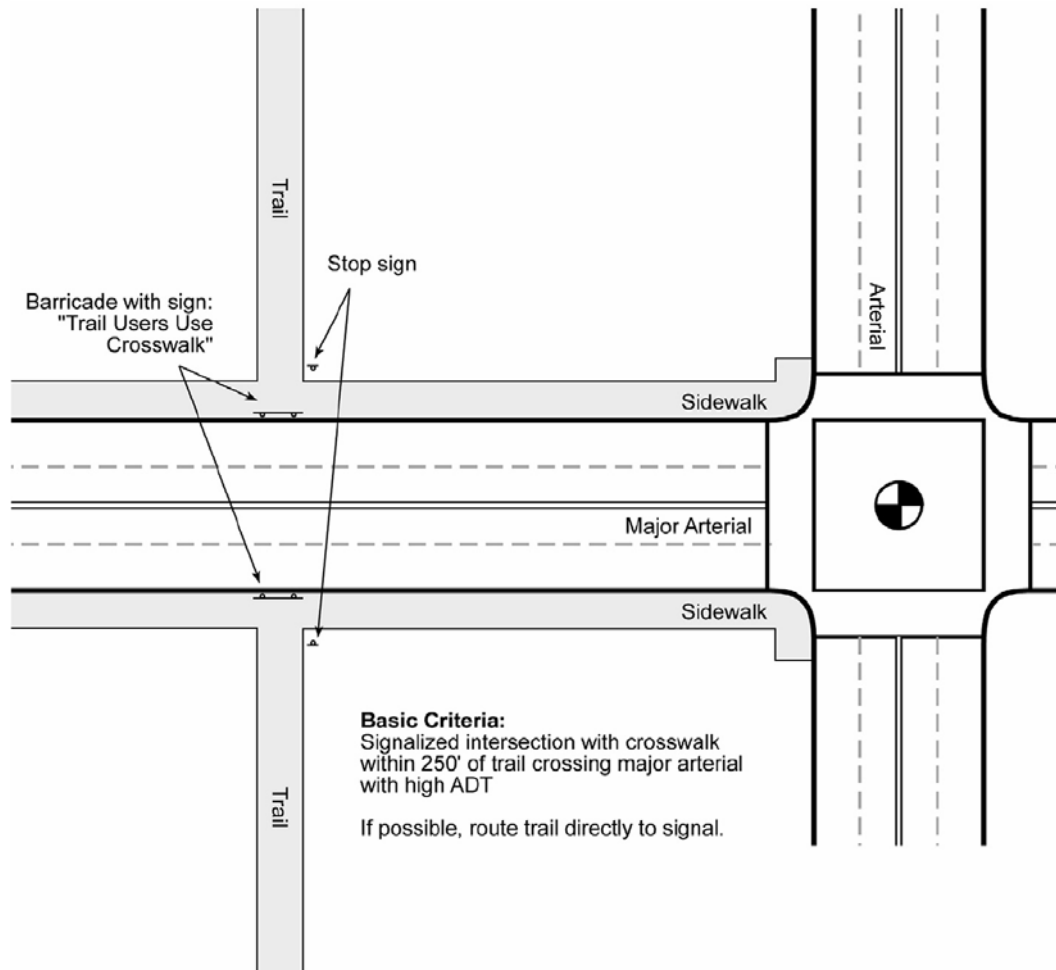


Figure 27. Type 2 Roadway Crossing Treatment

Type 3: Signalized/Controlled Crossings

New signalized crossings may be recommended for crossings that meet pedestrian, school, or modified warrants, are located more than 250 feet from an existing signalized



Type 3 crossing

intersection and where 85th percentile travel speeds are 40 mi/h and above and/or ADT exceeds 15,000 vehicles. Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on

traffic progression, timing with adjacent signals, capacity, and safety.

Signals are normally activated by push buttons, but also may be triggered by motion detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street. The signals may rest on flashing yellow or green for motorists when not activated, and should be supplemented by standard advanced warning signs. Typical costs for a signalized crossing range from \$150,000 to \$250,000. However, there are additional signal choices, such as "half-signals," that are discussed later in the study.

A good example of this type of signal is the pedestrian-activated crossing signal at the entrance to Wood Middle School. Along with the standard crossing signal,

the crossing also has lighted pedestrian crossing signs as well as in-pavement flashers.

Type 4: Grade-Separated Crossings

Grade-separated crossings may be needed where ADT exceeds 25,000 vehicles, and 85th percentile speeds exceed 45 mi/h. Safety is a major concern with both



Type 4 Grade-Separated Undercrossing

overcrossings and undercrossings. In both cases, trail users may be temporarily out of sight from public view and may have poor visibility themselves. Undercrossings, like parking garages, have the reputation of being places where crimes occur. Most crime on trails, however, appears to have more in common with the general crime rate of the community and the overall usage of the trail than any specific design feature.

Design and operation measures are available which can address user concerns. For example, an undercrossing can be designed to be spacious, well lit, equipped with emergency cell phones at each end and completely visible for its entire length prior to entering.



Type 4 Grade-Separated Overcrossing

Other potential problems with undercrossings include conflicts with utilities, drainage, flood control, and maintenance requirements. Overcrossings pose potential concerns about visual impact and functional appeal.

Signals and Signal Warrants

Full Signalized Crossings

The federal government has provided guidance to determine where traffic control signals should be considered for installation. The Pedestrian Volume signal warrant from the Manual on Uniform Traffic Control Devices (MUTCD) is intended for the application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. For signal warrant analysis, a location with a wide median, even if the median width is greater than nine meters (30 feet), should be considered as one intersection.

Warrant 4, Pedestrian Volume

Support:

The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Standard:

The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that both of the following criteria are met:

A. The pedestrian volume crossing the major street at an intersection or midblock location during an average day is 100 or more for each of any 4 hours or 190 or more during any 1 hour;

B. There are fewer than 60 gaps per hour in the traffic stream of adequate length to allow pedestrians to cross during the same period when the pedestrian volume criterion is satisfied. Where there is a divided street having a median of sufficient width for pedestrians to wait, the requirement applies separately to each direction of vehicular travel.

At non-intersection crossings, the traffic control signal should be pedestrian-actuated, parking and other sight obstructions should be prohibited for at least 30 m (100 ft) in advance of and at least 6.1 m (20 ft) beyond the crosswalk, and the installation should include suitable standard signs and pavement markings if a traffic control signal is justified by both this signal warrant and a traffic engineering study.

The criterion for the pedestrian volume crossing the major roadway may be reduced as much as 50 percent if the average crossing speed of pedestrians is less than 1.2 m/sec (4 ft/sec).

Warrants for the application of Traffic Control Devices (TCD) are a series of guidelines - not absolute values - that should be used in evaluating a situation. The satisfaction of a warrant is not proof that a TCD is needed, and failure to fully satisfy any specific warrant does not guarantee that the device could not serve a useful purpose. The application of warrants is effective only when combined with sound engineering judgment.

Warrant 5, School Crossing, is a second signal warrant that has applications in Wilsonville. Many of the community connectors in the Wilsonville system serve to connect the local schools, with several of these routes serving as the primary commuting routes for children. Furthermore, cities like Sacramento have modified their usage projections by upwardly accounting for youth, disabled, and elderly populations through the Equivalent Adult Units factors (see the chart at right) at intersections that are deemed to present special circumstances:

- 40 pedestrians cross during a one-hour period or 25 cross per hour for four consecutive hours using the Equivalent Adult Units system.⁹
- Fewer than five gaps in traffic during the peak five minute period.¹⁰

Equivalent Adult Units	
Type	Factor
Child	2
Senior	1.5
Disabled	2

9. Use of a system of Equivalent Adult Units is recommended in order to recognize intersections that require special attention due to the presence of seniors or children, even if they don't meet the volume requirement. These two groups are disproportionately represented in collision and fatality statistics.

10. Average number of gaps per five-minute period = total usable gap time in seconds divided by pedestrian crossing rate at four feet per second, multiplied by 12.

Warrant 5, School Crossing

Support:

The School Crossing signal warrant is intended for the application where the fact that school children cross the major street is the principal reason to consider installing a traffic control signal.

Standard:

The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of school children at an established crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the children are using the crossing is less than the number of minutes in the same period (see Section 7A.03⁶) and there are a minimum of 20 students during the highest crossing hour.

Before a decision is made to install a traffic control signal, consideration shall be given to the implementation of other remedial measures, such as warning signs and flashers, school speed zones, school crossing guards, or a grade-separated crossing.

The School Crossing signal shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 90 m (300 ft), unless the proposed traffic control signal will not restrict the progressive movement of traffic.

Guidance:

If this warrant is met and a traffic control signal is justified by an engineering study, then:

A.If at an intersection, the traffic control signal should be traffic-actuated and should include pedestrian detectors.

B.If at a nonintersection crossing, the traffic control signal should be pedestrian-actuated, parking and other sight obstructions should be prohibited for at least 30 m (110 ft) in advance of and at least 6.1 m (20 ft) beyond the crosswalk, and the installation should include suitable standard signs and pavement markings.

C.Furthermore, if installed within a signal system, the traffic control signal should be coordinated.

-
6. "Alternate gaps and blockades are inherent in the traffic stream and are different at each crossing location. For safety, students need to wait for a gap in traffic that is of sufficient duration to permit reasonably safe crossing. When the delay between the occurrence of adequate gaps becomes excessive, students might become impatient and endanger themselves by attempting to cross the street during an inadequate gap."

Half Signalized Crossings

In situations where there are few "crossable" gaps and where vehicles do not stop for pedestrians waiting to cross (or because of multiple lanes, it is unsafe to cross in front of a stopped vehicle), there are a number of innovative pedestrian traffic signals that do not operate as full signals that might be installed. Many of these models have been used successfully for years overseas, and their use in the United States has increased dramatically over the last decade.

Pelican

A Pelican (Pedestrian Light Control Activated crossing) signal incorporates a standard red-yellow-green signal light that rests in green for vehicular traffic until a pedestrian wishes to cross and presses the button. The signal then changes to yellow, then red, while Walk is shown to the pedestrian. The signal can be installed as either



Pelican signal in Tucson, AZ



Puffin signal

a one-stage or two-stage signal, depending on the characteristics of the street. In a two-stage crossing, the pedestrian crosses first to a median island and is then channelized along the median to a second signalized crossing point. At that point, the pedestrian then activates a second crossing button and another crossing signal changes to red for the traffic while the pedestrian is given a Walk signal. The two crossings only delay the pedestrian minimally and allow the signal operation to fit into the arterial synchronization, thus reducing the potential for stops, delays, accidents, and air quality environmental issues. A Pelican crossing is quite effective in providing a pedestrian crossing at midblock locations when the technique can be accommodated into the roadway design.

Puffin

A Puffin (Pedestrian User Friendly Intelligent) crossing signal is an updated version of a Pelican crossing. The signal consists of traffic and pedestrian signals with push-button signals and infrared or pressure mat detectors. After a pedestrian pushes the button, a detector verifies the presence of the pedestrian at the curbside. This helps eliminate false signal calls associated with people who push the button and then decide not to cross. When the pedestrian is given the Walk signal, a separate motion detector extends the Walk interval (if needed) to ensure that slower pedestrians have time to cross safely. Conversely, the signal can also detect when the intersection is clear of pedestrians and return the green signal to vehicles, reducing vehicle delay at the light. Puffin signals are designed to be crossed in a single movement by the pedestrian, unlike the Pelican signal, which can be designed to cross in either one or two stages.

Hawk

A Hawk (High-Intensity Activated Crosswalk) signal is a combination of a beacon flasher and traffic control signaling technique for marked crossings. The beacon signal consists of a



Hawk signal

traffic signal head with a red-yellow-red lens. The unit is normally off until activated by a pedestrian. When pedestrians wish to cross the street, they press a button and the signal begins with a flashing yellow indication to warn approaching drivers. The flashing yellow is then followed by a solid yellow, advising the drivers to prepare to stop. The signal is then changed to a solid red, at which time the pedestrian is shown a Walk indicator. The beacon signal then converts to an alternating flashing red, allowing the drivers to proceed after stopping at the crosswalk, while the pedestrian is shown the flashing don't walk signal.

Pedestrian Control Features

Countdown Signals

According to the MUTCD, "Pedestrian Signal Heads provide special types of traffic signal indications exclusively intended for controlling pedestrian traffic. These signal indications consist of the illuminated



Pedestrian countdown signal

symbols of a WALKING PERSON (symbolizing WALK) and an UPRaised HAND (symbolizing DONT WALK)." An advanced type of pedestrian signal head being installed in Wilsonville contains a countdown signal, in addition to the WALK/DON'T WALK symbol. The countdown signal displays the number of seconds remaining for the individual to complete their crossing.

Leading Pedestrian Interval (LPI)

Including LPI at signalized crossings provides pedestrians with a three- to four-second head start into the intersection before parallel traffic is released by the green light. LPI's ensure that pedestrians are well into the intersection and visible to turning vehicles prior to vehicles entering the crosswalk.

Summary of At-Grade Recommendations

In summary, Table 16 provides guidance on how to implement at-grade roadway crossings in Wilsonville.

Table 16. Summary of Trail-Roadway Intersection Recommendations¹¹

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT ≤ 9,000			Vehicle ADT > 9,000 to 12,000			Vehicle ADT > 12,000 to 15,000			Vehicle ADT > 15,000		
	Speed Limit**											
	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h
2 Lanes	1	1	1/1+	1	1	1/1+	1	1	1+/3	1	1/1+	1+/3
3 Lanes	1	1	1/1+	1	1/1+	1/1+	1/1+	1/1+	1+/3	1/1+	1+/3	1+/3
Multi-Lane (4 or more lanes) with raised median***	1	1	1/1+	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3
Multi-Lane (4 or more lanes) without raised median	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3

*General Notes: Crosswalks should not be installed at locations that could present an increased risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make crossings safer, nor will they necessarily result in more vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed, to improve the safety of the crossing. These are general recommendations; good engineering judgment should be used in individual cases for deciding which treatment to use.

For each trail-roadway crossing, an engineering study is needed to determine the proper location. For each engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volume, vehicle speed, sight distance, vehicle mix, etc. may be needed at other sites.

**Where the speed limit exceeds 40 mi/h (64.4 km/h), marked crosswalks alone should not be used at unsignalized locations.

***The raised median or crossing island must be at least 4 ft (1.2 m) wide and 6 ft (1.8 m) long to adequately serve as a refuge area for pedestrians in accordance with MUTCD and AASHTO guidelines. A two-way center turn lane is not considered a median.

1= Type 1 Crossings. Ladder-style crosswalks with appropriate signage should be used.

1/1+ = With the higher volumes and speeds, enhanced treatments should be used, including marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

1+/3 = Carefully analyze signal warrants using a combination of Warrant 2 or 5 (depending on school presence) and EAU factoring. Make sure to project usage based on future potential demand. Consider Pelican, Puffin, or Hawk signals in lieu of full signals. For those intersections not meeting warrants or where engineering judgment or cost recommends against signalization, implement Type 1 enhanced crosswalk markings with marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

11. This table is based on information contained in the U.S. Department of Transportation Federal Highway Administration Study, " Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations," February 2002.



Appendices

Appendix A: Project Costs

Appendix B: Trail Development on the Willamette River

Appendix C: Bicycle and Pedestrian Off-Street Capital Improvement Plan

Appendix A: Project Costs

Estimated Costs for Wilsonville's Bicycle and Pedestrian Network: Regional Trails																
ID	Trail Name and Segments	Trail miles Construction paved)	Trail miles Construction (unpaved)	On-street miles				Crossings				Other***	Preliminary Cost	Design & CM (25%)	Contingency (30%)	Estimate of Total Cost
				Widening	Stripe/sign bike lane	Sidewalk (6', one side)	Signing	Type 1	Type 1+	Type 2**	Type 3					
				\$300,000	\$132,000	\$300,000	\$25,000	\$184,800	\$1,500	\$5,000	\$15,000					
		per mile *	per mile *	per mile	per mile	per mile	per mile	per crossing	per crossing	per crossing	per crossing					
Regional Trails																
R1	Tonquin Trail	\$1,200,000					\$6,000		\$45,000			\$600,000	\$1,851,000	\$462,750	\$555,300	\$2,869,050
R2	Stafford Spur Trail	\$900,000					\$4,500				\$100,000		\$1,004,500	\$251,125	\$301,350	\$1,556,975
R3	Boeckman Creek Trail	\$720,000					\$3,600					\$450,000	\$1,173,600	\$293,400	\$352,080	\$1,819,080
R4	Waterfront Trail	\$870,000					\$4,200	\$5,000				\$25,000	\$904,200	\$226,050	\$271,260	\$1,401,510
R5	Willamette River Crossing	\$0										\$7,500,000	\$7,500,000	\$1,875,000	\$2,250,000	\$11,625,000
R6	Wiedeman Road Trail	\$450,000			\$22,500	\$332,640		\$5,000	\$15,000			\$2,000,000	\$2,825,140	\$706,285	\$847,542	\$4,378,967
	Phase 1	\$210,000						\$5,000					\$215,000	\$53,750	\$64,500	\$333,250
	Phase 2	\$135,000						\$5,000				\$2,000,000	\$2,140,000	\$535,000	\$642,000	\$3,317,000
	Phase 3	\$75,000			\$22,500	\$332,640		\$5,000	\$15,000				\$450,140	\$112,535	\$135,042	\$697,717
Totals																\$23,650,582

* actual cost will depend on ROW acquisition, drainage issues, surface selected

** includes signal modifications to add pedestrian actuation

*** special conditions that may include bridge construction, property acquisition, boardwalk construction, and environmental evaluation and permitting

R1: includes -multiple boardwalks, trailhead, multiple creek bridges, environmental evaluation and permitting

R3: includes - boardwalk, trailhead, environmental evaluation and permitting

R4: includes - environmental evaluation and permitting

R5: includes - connections to north and south banks, materials, engineering and installation of cantilevered walk, full cost estimate in Appendix

R6: includes - bicycle/pedestrian bridge overpass of I-5

\$4,347,967

Estimated Costs for Wilsonville's Bicycle and Pedestrian Network: Community Pathways and Bikeways																		
ID	Trail Name and Segments	Trail miles Construction (12' paved)	Trail miles Construction (unpaved)	On-street miles					Crossings				Other***	Preliminary Cost	Design & CM (25%)	Contingency (30%)	Estimate of Total Cost	
		Widening	Stripes/sign bike lane	Sidewalk/Path one side	6'	Signing	Type 1	Type 1+	Type 2**	Type 3								
		\$300,000 per mile*	\$132,000 per mile	\$300,000 per mile*	\$25,000 per mile	\$184,800 per mile	\$1,500 per mile	\$5,000 per crossing	\$15,000 per crossing	\$10,000 per crossing	\$100,000 per crossing							
Community Pathways and Bikeways																		
C1	Town Center Improvements													\$60,000	\$60,000	\$15,000	\$18,000	\$93,000
C2	West Town Center Loop					\$221,760		\$1,845						\$223,605	\$55,901	\$67,082	\$346,588	
C3	Town Center Park Trail	\$45,000						\$240						\$45,240	\$11,310	\$13,572	\$70,122	
C4	Town Center Loop Bridge													\$2,500,000	\$2,500,000	\$625,000	\$750,000	\$3,875,000
C5	Parkway Avenue				\$14,000			\$840						\$14,840	\$3,710	\$4,452	\$23,002	
C6	Boeckman Road Bridge													\$2,500,000	\$2,500,000	\$625,000	\$750,000	\$3,875,000
C7	Boeckman Rd			\$120,000	\$10,000	\$184,800		\$750						\$315,550	\$78,888	\$94,665	\$489,103	
C8	Canyon Creek extension			\$168,000.00	\$14,000.00	\$103,488.00		\$840						\$286,328	\$71,582	\$85,898	\$443,808	
C9	Boeckman Road			\$300,000	\$17,250	\$147,840		\$1,035						\$100,000	\$566,125	\$141,531	\$169,838	\$877,494
C10	Frog Pond	\$156,000						\$780						\$25,000	\$181,780	\$45,445	\$54,534	\$281,759
C11	School Trail	\$417,000												\$25,000	\$442,000	\$110,500	\$132,600	\$685,100
C12	Memorial Park Central Loop Trail	\$210,000						\$1,125						\$211,125	\$52,781	\$63,338	\$327,244	
C13	French Prairie Drive	\$300,000						\$1,260	\$15,000					\$400,000	\$716,260	\$179,065	\$214,878	\$1,110,203
C14	Miley Rd			\$360,000	\$30,000	\$221,760		\$1,800						\$613,560	\$153,390	\$184,068	\$951,018	
C15	Memorial Drive / 5th Street overpass													\$4,000,000	\$4,000,000	\$1,000,000	\$1,200,000	\$6,200,000
C16	5th Street					\$33,264		\$270						\$33,534	\$8,384	\$10,060	\$51,978	
C17	Boones Ferry Road			\$132,000	\$11,000	\$162,624		\$660						\$306,284	\$76,571	\$91,885	\$474,740	
C18	Wilsonville/RR tracks crossing									\$15,000				\$15,000	\$3,750	\$4,500	\$23,250	
C19	Brown Road	\$204,000						\$1,020	\$5,000					\$210,020	\$52,505	\$63,006	\$325,531	
C20	5th Street extension	\$105,000						\$525	\$5,000					\$110,525	\$27,631	\$33,158	\$171,314	
C21	Water Treatment Plant connection	\$147,000						\$735	\$5,000					\$152,735	\$38,184	\$45,821	\$236,739	
C22	Willamette Way East sidewalks					\$18,480								\$18,480	\$4,620	\$5,544	\$28,644	
C23	Barber Street / Boones Ferry Road			\$174,000	\$14,500	\$214,368		\$840						\$403,708	\$100,927	\$121,112	\$625,747	
C24	Boberg Road			\$144,000		\$88,704		\$720						\$233,424	\$58,356	\$70,027	\$361,807	
C25	Barber Street			\$120,000.00	\$10,000.00	\$147,840.00		\$600						\$278,440	\$69,610	\$83,532	\$431,582	
C26	Kinsman Road extension			\$630,000.0	\$52,500.0	\$739,200.0		\$3,150						\$1,424,850	\$356,213	\$427,455	\$2,208,518	
C27	Barber Street			\$375,000	\$31,250	\$462,000		\$1,875	\$15,000					\$885,125	\$221,281	\$265,538	\$1,371,944	
C28	Villeobis Open Space	\$150,000												\$150,000	\$37,500	\$45,000	\$232,500	
C29	Villeobis Loop				\$32,500.0	\$480,480.00		\$1,980						\$514,960	\$128,740	\$154,488	\$798,188	
C30	Villeobis Drive			\$87,000.00	\$7,250.00	\$110,880.00		\$435						\$205,565	\$51,391	\$61,670	\$318,626	
C31	Grahams Ferry Road			\$540,000	\$45,000	\$665,280		\$2,700	\$20,000					\$1,272,980	\$318,245	\$381,894	\$1,973,119	
C32	Boeckman Road			\$81,000.00	\$6,750.00	\$49,896.00		\$405						\$138,051	\$34,513	\$41,415	\$213,979	
C33	95th Avenue					\$51,744								\$51,744	\$12,936	\$15,523	\$80,203	
C34	Clutter Road			\$90,000	\$7,500	\$110,880		\$450	\$15,000					\$223,830	\$55,958	\$67,149	\$346,937	
C35	Cahalin Road			\$195,000	\$16,250	\$221,760		\$975	\$10,000					\$443,985	\$110,996	\$133,196	\$688,177	
C36	BPA Powerline Trail	\$300,000						\$1,500	\$15,000					\$316,500	\$79,125	\$94,950	\$490,575	
C37	Area 42 Trail	\$128,000						\$750	\$10,000					\$136,750	\$34,188	\$41,025	\$211,963	
C38	Commerce Circle					\$62,832								\$62,832	\$15,708	\$18,850	\$97,390	
C39	Elligsen Road				\$6,500	\$96,096								\$102,596	\$25,649	\$30,779	\$159,024	
C40	Parkway Avenue			\$141,000	\$11,750	\$173,712		\$705	\$5,000					\$332,167	\$83,042	\$99,650	\$514,859	
C41	Parkway Center Connector	\$75,000						\$375						\$75,375	\$18,844	\$22,613	\$116,831	
C42	Canyon Creek Trail	\$102,000						\$510						\$25,000	\$127,510	\$31,878	\$38,253	\$197,641
	Total																	\$32,400,244

* actual cost will depend on ROW acquisition, drainage issues, surface selected

** includes signal modifications to add pedestrian actuation

*** special conditions that may include bridge construction, property acquisition, and boardwalk construction

Estimated Costs for Wilsonville's Bicycle and Pedestrian Network: Local Access Trails																	
ID	Trail Name and Segments	Trail miles Construction (12' paved)	Trail miles Construction (unpaved)	On-street miles				Crossings				Other***	Preliminary Cost	Design & CM (25%)	Contingency (30%)	Estimate of Total Cost	
				Widening	Stripe/sign bike lane	Sidewalk/Path one side	6'	Signing	Type 1	Type 1+	Type 2**						Type 3
				\$300,000 per mile *	\$132,000 per mile	\$300,000 per mile*	\$25,000 per mile	\$184,800 per mile	\$1,500 per mile	\$5,000 per crossing	\$15,000 per crossing						\$10,000 per crossing
Local Access Trails																	
L1	Center Loop Trail		\$165,000										\$100,000	\$265,000	\$66,250	\$79,500	\$410,750
L2	Triangle Forest Trail		\$79,200										\$50,000	\$129,200	\$32,300	\$38,760	\$200,260
L3	Indian Plum Creek Trail		\$72,600										\$50,000	\$122,600	\$30,650	\$36,780	\$190,030
L4	Lone Oak Trail		\$13,200											\$13,200	\$3,300	\$3,960	\$20,460
L5	River Trail		\$81,840											\$81,840	\$20,460	\$24,552	\$126,852
L6	Kolbe Homestead Trail		\$39,600											\$39,600	\$9,900	\$11,880	\$61,380
L7	Klein Homestead Trail		\$39,600											\$39,600	\$9,900	\$11,880	\$61,380
L8	Park Access Trail		\$6,600.00					\$750						\$7,350	\$1,838	\$2,205	\$11,393
L9	Town Center Loop		\$33,000											\$33,000	\$8,250	\$9,900	\$51,150
L10	Park @ Merryfield Trail	\$30,000												\$30,000	\$7,500	\$9,000	\$46,500
L11	Tonquin Connector		\$19,800.00											\$19,800	\$4,950	\$5,940	\$30,690
L12	Villebois Loop Trail		\$110,880.00											\$110,880	\$27,720	\$33,264	\$171,864
L13	School Trail		\$139,920.00											\$139,920	\$34,980	\$41,976	\$216,876
L14	Frog Pond Loop		\$155,760										\$25,000	\$180,760	\$45,190	\$54,228	\$280,178
L15	Rivergreen Trail		\$85,800					\$975					\$75,000	\$161,775	\$40,444	\$48,533	\$250,751
Total																	\$1,879,763

* actual cost will depend on ROW acquisition, drainage issues, surface selected

** includes signal modifications to add pedestrian actuation

*** special conditions that may include bridge construction, property acquisition, and boardwalk construction

Appendix B: Trail Development on the Willamette River

City of Wilsonville State and Federal Permitting Overview

Development requirements for a trail along the banks of the Willamette River are dependent on several key factors including funding source, setback from the top of riverbank, riverbank conditions, and anticipated type of trail construction. In general, the further the trail moves away from the river, the less onerous the regulatory requirements become. In addition, use of local funds vs. state/federal dollars allows greater flexibility in what can and can't be constructed. For the purposes of this analysis, it is assumed a multi-use paved trail is desirable, and federal funds will be used to construct the trail.

Development Standards

The design of a trail on the banks of the Willamette River will need to follow national, state and regional standards and guidelines for a shared-use path. These standards dictate the trail width, materials, slope, and horizontal and vertical dimensions/clearances of the trail. As opposed to standards, guidelines are not strict requirements, but rather strongly recommended design treatments developed in an effort to protect an existing resource, in this case the river and its associated habitat. The following table provides a summary of trail development standards.

Table A-1. Trail Development Standards

Type	Agency (& contacts)	Contact/Document	Relevant Standards & Guidelines
Region	Metro Regional Services Parks and Greenspaces	Jennifer Buddhabatti, 503-797-1700	Guidelines: Metro issued their "Green Trails Guidebook", outlining guidelines that pertain to urban trails adjacent to natural resources. These best management practices will influence the design and alignment of future regional trails.
State	Oregon Department of Transportation, Oregon Bicycle and Pedestrian Plan	Michael Ronkin, 503-986-3555 <i>Oregon Bicycle and Pedestrian Plan</i>	Standards Widths and Clearances: 8 ft. minimum width, 2' minimum lateral clear distance, 8' minimum overhead clearance, 5' separation from edge of roadway or fence separation. Many of the standards and guidelines are based on AASHTO recommendations.
Federal	American Association of State Highway and Transportation Officials	<i>Guide for the Development of Bicycle Facilities</i>	Guidelines: This book provides guidelines for trails including widths, grades, intersection treatments, pavement surfaces, lighting, and signing.
Federal	Americans with Disabilities Act- US Dept. of Justice	<i>ADA Standards for Accessible Design</i>	These standards apply to public facility designs and require that urban trails meet accessibility requirements regarding slope, clearance, height of facilities (i.e. drinking fountains).
Federal	Federal Highway Administration	<i>Manual on Uniform Traffic Control Devices</i>	The MUTCD provides both standards and guidelines regarding trail and roadway traffic control devices. The standards primarily include signing recommendations.

Historic Resources

The State Historic Preservation Office (SHPO) administers Section 106 of the National Historic Preservation Act of 1966 governing the protection of historic and cultural resources. Undertakings that adversely affect properties that are included in or are eligible for inclusion in the National Register of Historic Places should be avoided. Any project element calling for alteration or demolition of historically or architecturally significant property (normally 50 years or older) or property contributing to the integrity of a cohesive older neighborhood or historic district, and any project element calling for disturbance of previously undeveloped ground in the course of new construction is required by federal regulations to be cleared by the SHPO. In addition, the SHPO will need to review projects for any impacts to prehistoric sites. Given the prehistoric and early settlement pattern of Wilsonville in association with the Willamette River, it is anticipated that there will be some historic sites present along the river that will require a 106 permit.

Cut & Fill

The trail may involve cut and fill along the riverbank. The Department of State Lands (DSL) administers ORS 196.795-990, requiring people who plan to remove or fill materials in waters of the state to obtain a permit from the DSL. "Waters of the state" in reference to the Willamette River typically means below top of bank (100 year flood elevation). The DSL's mission focuses on the protection of water quality, fish and their habitats, and cultural resources. Cut and fill in excess of 50 cubic yards will require a permit.

Salmon Issues

Chinook and steelhead are both federally listed species found on the Willamette River.

DSL has defined "Essential Indigenous Anadromous Salmonid Habitat" areas. The confluences of Boeckman Creek and Corral Creek with the Willamette River have been defined as essential habitat areas. Within these areas, a DSL permit will be required regardless of the amount of cut and fill.

DSL through the Oregon Department of Fish and Wildlife (ODFW) has established best management practices for protection of fish and wildlife. Any construction impacting the waters of the state will be encouraged to comply with these best management practices. Though the trail may not impact the land

below ordinary high water, DSL and ODFW will review impacts to the riparian forest along the river, since the riparian forest is considered essential to the protection of the river.

DSL has defined in-water work windows to minimize disturbance of salmonid species. For the stretch of river through Wilsonville, the in water work windows are defined from June 1st through October 31st, and from December 1st through January 31st. This would include any river bank work that might be required for the trail.

Biological Assessment

Assuming federal money is granted for the construction of a trail along the river, a biological assessment (BA) will be required for compliance with Section 7 of the Endangered Species Act of 1973. The BA would address potential project impacts to federally listed flora and fauna species present. The Oregon Department of Transportation (ODOT) will review and approve the BA. If the effect analysis determines "No Effect" then the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) would not need to review the BA. Under law, federal agencies are not required to obtain concurrence on "No Effect" calls. If the effect determination is "may affect, not likely to adversely affect," then ODOT would pass on the BA to the USFWS and NMFS for concurrence. Generally, earth-moving activities within 300 feet of the Willamette River containing listed fish species cannot be a "No Effect." Because the trail is a relatively low-impact proposal, the agencies would most likely review the project favorably, but would look to off set potential impacts with some form of mitigation. This might include a number of measures such as improving fish habitat within the river, bio-engineering a portion of the river bank, use of pervious pavement, or even off site mitigation at the State's request. The US Army Corps of Engineers may also need to review the biological assessment if any wetland fill is required.

Wetlands

Fieldwork to delineate possible wetlands along the corridor will be required prior to construction of the trail. Coordination with local, state, and federal agencies may be required, depending on the final trail design. Any disturbance to the river or creek banks (e.g. Boeckman Creek) or any action involving the removal or fill of material from a wetland is likely to

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require permitting from the Division of State Lands (DSL) and / or the US Army Corps of Engineers (Corps). Disturbance thresholds vary for the DSL and the Corps. Under Oregon's Removal-Fill Law (ORS 196.795-990), removal or fill of more than 50 cubic yards in a wetland requires a permit from DSL. If up to 0.25 or 0.5 acres of wetland fill were required, then a Nationwide Permit from the Corps would be required.

Clackamas County

River and Stream Conservation Areas

Clackamas County regulates development in River and Stream Conservation Areas (RSCA) (Section 704, special district). RSCAs are the protective corridor around streams and vary according to size of the stream. The stream conservation area is measured at a horizontal distance from the mean high water line and is 100 feet for large streams 70 feet for medium streams, and 50 feet for small streams. The size classification of streams is identified on Water Protection Rule Classification Maps available at the county planning office.

The RSCA special district requires setbacks for structures, but does not specify setbacks for recreational trails. The County is willing to consider trails an allowable use within RSCAs (Greg Fritts, Clackamas County, 2004), but more discussion with the County is needed to establish development standards and potential mitigation for trails in stream conservation areas. Proposed trail development will need to meet the objective of protecting the natural condition of the stream corridor.

Conservation Wetland District

Alterations, developments, and enhancements proposed in wetland areas would require review by Clackamas County, and permitting by DSL and/or the U.S. Army Corps of Engineers (Corps). Proposed activities within wetland buffers (25 feet of the wetland boundary) will require review and approval by the County. The DSL and the Corps do not regulate activities in wetland buffers. According to the Conservation Wetland District regulations, "Public trails and boardwalks may be constructed within buffer areas when consistent with a North Clackamas Parks and Recreation District or other adopted local government Plan" (Section 705.05). Compensatory mitigation may be required depending on the disturbance to the wetland and the buffer area.

Mitigation may include enhancing or creating wetland areas. Areas disturbed for trail development will need to be revegetated with approved plant species.

Floodplain Management District

Clackamas County regulates uses in the 100-year floodplain. "Hiking and horseback riding trails" are permitted uses within the 100-year floodplain; however, filling, grading, and paving of trails within the 100-year floodplain will require development review under the floodplain management district. Trail development will likely be required to achieve balanced removal and fill within the floodplain. Mitigation requirements are not specified in the text of the floodplain management district.

Stormwater Drainage

Clackamas County requires storm drainage and erosion control for all "significant residential, commercial, industrial and recreational development" (Section 1008, Zoning and Development Ordinance). The County does not, however, have specific requirements for treating stormwater from trail surfaces. Stormwater treatment requirements will need to be clarified with the County during development review.

Steep Slopes

Clackamas County regulates development on steep slopes and unstable soils. The development standards (Section 1003) require an engineering geologic study for areas with slopes greater than 20 percent; however, this may be waived for trail development depending on project details. Trail development standards and potential mitigation requirements on steep slopes should be clarified with the County during development review.

Willamette River Greenway

Oregon's statewide planning goals and guidelines, Goal 15: Willamette River Greenway was established:

To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

The greenway is typically defined as a 150-foot protected buffer along the river edge, but does recognize existing land uses as of 1975. The 150 feet begins at the ordinary low water line and extends

outward from the river edge. Public access to the river and recreation opportunities is encouraged in the greenway. Implementation of the greenway program is recognized as a cooperative, multi-agency effort since the plan encompasses a vast geographic area.

Section 705 of the Clackamas County Zoning Code requires County review of developments impacting the greenway. Upon receipt of a greenway application, the County will forward the application onto the State Parks and notify the DSL of the application. Though public access to the river is considered an exemption to the greenway review, the County code also states that changes in use within the greenway requires review:

Changes in Use: Making a different use of the land or water which requires construction, alterations of the land, water, or other areas outside of existing buildings or structures which substantially alters the appearance of the structure.

Given the strong emphasis placed on protection of the Willamette River and the riparian edge, the development of a trail paralleling the river is likely to require a greenway review.

The City of Wilsonville

Conditions for development within the Willamette River Greenway are addressed through the City of

Wilsonville Planning and Development Code, Chapter 4-Sections 4.139 and 4.500-4.515. Section 4.139 applies to land covered by the Significant Resource Overlay Zone (SROZ), including the Willamette Greenway. Uses and activities exempt from the SROZ include the construction of new pedestrian or bike paths into the SROZ in order to provide access to the sensitive area or across the sensitive area, provided the location is consistent with the intent of the Wilsonville Comprehensive Plan.

Section 4.514.04 requires all non-water dependent uses to be setback from the top of bank by a minimum of 75 feet, which would include any shared-use path. Additionally, any tree removal will require a tree removal permit by the City and need to be reviewed by the Development Review Board, with mitigation a mandatory requirement. Trails are not specifically mentioned as a permitted outright use, though Section 4.506, General Uses Permitted Outright allows for activities that protect, conserve, enhance and maintain public recreation within the greenway. However, the key question to be wrestled with is, Does the development of a trail within the greenway constitute an intensification of use? Given the sensitive nature of the existing riparian edge to the Willamette River, it is highly likely that a trail will require a conditional use permit.

Table A-2. Summary of Regulatory Agency Reviews

Type	Agency	Relevant Permits, Regs, Reviews
City	Planning	Willamette River Greenway review
County	Planning	Wetland buffer impacts; Steep Slopes; Flood Plain Impacts; Willamette River Greenway review
State	DSL	Review cut and fill and essential habitat impacts.
State	ODFW	Review fish and wildlife impacts, best practices and mitigation measures.
State	State Historic Preservation office SHPO	Review for impacts to prehistoric and historic resources.
State	ODOT	Review and approve a biological assessment for trail development.
Federal	US Fish and Wildlife Service	Review and approve a biological assessment for trail development if the BA determination is, "may affect."
Federal	National Marine Fisheries Service	Review and approve a biological assessment for trail development if the BA determination is, "may affect."
Federal	US Army Corps of Engineers	Review and approve a biological assessment for trail development if wetland fill is required.

Appendix C: Bicycle and Pedestrian Off-Street Capital Improvement Plan

**Bicycle and Pedestrian
2007 - 2012
Off-street Capital Improvement Plan**

#	Project / Program Name	Expenditure to Date	Expenditures					Total	Potential Funding Source											
			2007/2008	2008/2009	2009/2010	2010/2011	2011/2012		General Fund	Developer	URA	Grants	SDC	Bond	Homeowner	School District	Road Operating	Small Cap Fund**	Other	
R1	Tonquin Trail Phase I: Planning		\$60,000	\$60,000				\$120,000				X								X
R1	Tonquin Trail Phase I: Design				\$60,000	\$60,000		\$120,000				X								X
R5	Willamette River Bridge Phase I: Planning and Design	\$200,000	\$100,000	\$500,000	\$600,000		\$1,400,000	X				X								X
R5	Willamette River Bridge Phase II: Construction						\$10,000,000					X								X
L10	Park at Merryfield Trail	\$46,500					\$46,500					X								X
R4a	Boones Ferry / Memorial Park Trail improvements			\$50,000			\$50,000					X								X
R3	Boeckman Creek Trail Phase I: Planning and Design				\$285,000		\$285,000	X				X	X							
R6a	Wiedeman Road Trail - Phase I					\$330,000	\$330,000													
L1/L2/L3/L4	Graham Oaks Trails*				\$330,000		\$330,000													
L5/L6/L7	Memorial Park Trails*	\$1,220,000		\$50,000			\$1,270,000													
R3	Boeckman Creek Trail Phase II: Construction						\$1,615,000					X	X							X
	Canyon Creek Park*	\$25,000					\$25,000					X	X							
C32	Villebois Open Space*						\$232,500	\$232,500	X	X										X
L12	Villebois Loop Trail*					\$170,000	\$170,000	\$170,000	X	X										X
L13	Villebois School Trail*					\$217,000	\$217,000	\$217,000	X	X										X
	TOTAL	\$0	\$1,551,500	\$210,000	\$1,225,000	\$1,377,000	\$11,847,500	\$16,211,000												

* *Also appears on Parks CIP*

